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Another Car Ferry for Lake Michigan Service.

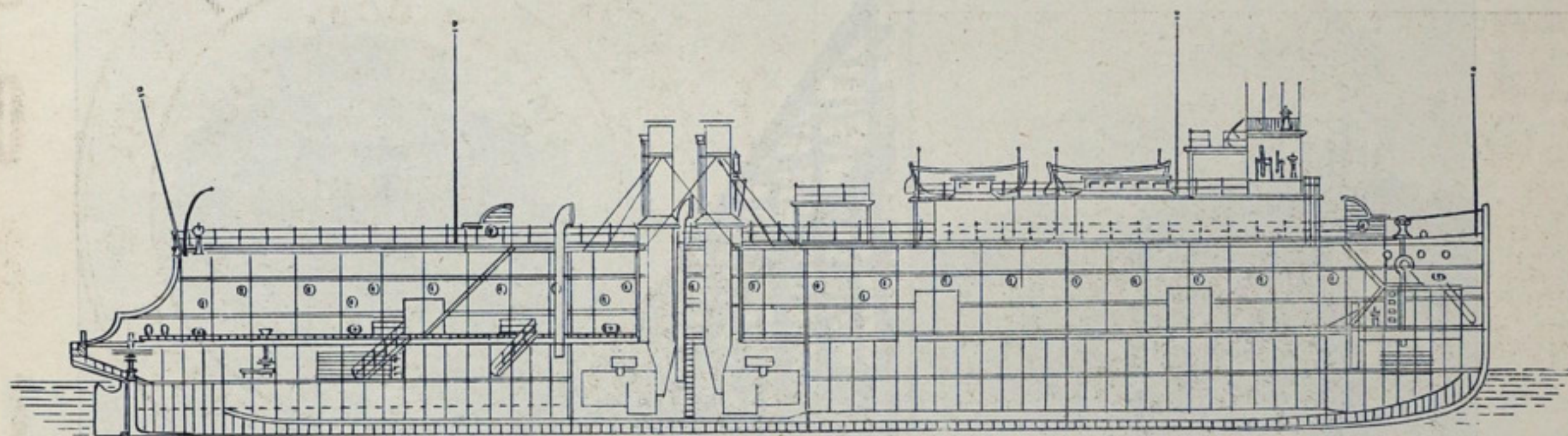
Another steel car ferry, to be equal in most respects to the best vessels of this type on the lakes, is to be built by the Globe Iron Works Co. of Cleveland for Lake Michigan service of the Ann Arbor Railroad and Steamship Lines, Toledo. This is the contract on which lake ship builders have been figuring for several weeks past. The approximate cost of the vessel, as announced off-hand when the contract was placed, is \$185,000, but the actual cost will very probably be somewhat below that figure. The Ann Arbor company has been operating two smaller wooden car ferries for several years past between Frankfort, Mich., and Wisconsin points on the west shore of Lake Michigan. The new vessel is to be completed about Oct. 15.

This car ferry will be of the following dimensions: Length over all, 270 feet; length on water line, 259 feet; beam, moulded, 52 feet; depth to main deck, molded, 18 feet 6 inches. On the main deck there will be four tracks, and the necessary jack screws, chain, clamps, etc. for securing twenty-two railway cars. Space for windlass and accommodations for deck-hands will also be provided just above this deck in the forward part of the vessel. It is intended to carry a limited number of passengers, so that there will be two deck houses forward, in which arrangements will be made for this purpose, and in which the quarters of officers will also be located, with texas and pilot house above. The hold will be divided into seven compartments by six thwartship watertight bulkheads. One of these

Waiting Vessels at Buffalo.

Buffalo, April 20.—On Monday of this week the grain fleet was the largest ever assembled at this port. There was upwards of two millions of grain consigned to the City elevator, upwards of one million to the Export and considerably more than a million to other elevators in the harbor, and nearly all the elevators with rail connections were fully employed. The harbor proper was not nearly large enough to hold all the vessels, as in addition to the grain fleet, there were a great many vessels that were without cargoes, some of them vessels that had wintered here. The overflow was distributed alongside the government breakwater, or anchored in the outer harbor, awaiting their turns at elevators as opportunity was afforded to unload them. The situation since Monday has eased off to some extent, but as a matter of course, with such an enormous quantity of grain, many of the vessels have been considerably delayed and there has been more or less talk of compensation being demanded for detention.

But custom has so regulated the matter of vessels taking turns at Buffalo elevators, that the courts have ruled against the vessels when suits have been brought as a result of crowded conditions, such as prevail at present. A case in point is that of the owners of the steamer Owen and schooner Nicholson, who libeled cargoes of their vessels after a delay of ten days in unloading during one of the fall blockades. This case was tried in the United States district court, northern district of New York, not long ago. The court held that the consignee was not liable for dam-



TWIN-SCREW CAR FERRY FOR LAKE MICHIGAN SERVICE OF ANN ARBOR COMPANY.

compartments will be suited to carrying 25,000 bushels of wheat; another will contain accommodations for fireman and other members of crew; others will be for boilers, engines, chain lockers, water ballast, etc. Four gangways are to be provided on each side of the vessel for use when required for freight other than railway cars, and the bow of the ship is to be especially strengthened for working in ice.

There will be two sets of horizontal, compound, direct-acting engines with cylinders of 20 and 40 inches diameter and 36 inches stroke. Steam will be furnished by four boilers of the tubular firebox type, each 6 feet 6 inches diameter and 14 feet long, built to withstand 125 pounds steam pressure. Feed and air pumps to be provided for the propelling machinery, as well as fire, sanitary and ballast pumps, are all to be of duplex type, and of a kind best suited to marine service. Provision is made for steam heat throughout the ship and the capacity of the electric light plant is to be 250 16-candle-power lights. Electric masthead and signal lights will be furnished in addition to oil lamps for these purposes. Among other features of equipment that indicate the thorough manner in which the vessel will be fitted out, are the following: Two stockless anchors of 3,000 pounds each; steam windlass and steam capstan forward, as well as two double-cylinder steam capstans on main deck aft, one on each side of the vessel, with engines below deck and controlling gear above; steam steering gear and auxiliary hand gear, ash elevator, etc. Propellers are to be four-bladed, cast solid, each of 11 feet diameter and suitable pitch.

Another order for steel rails on foreign account is announced from the east. The Sparrow's Point (Md.) works has sold 85,000 tons to go to Russia, the price being made aboard ship here. In the seven weeks preceding April 10 more than 100 solid trains of steel rails were shipped from the Illinois Steel Co.'s works, having Japan as their destination. A steamer sailing last week from Mobile for Kobe, Japan, carried 2,200 tons of the rails. Other shipments have been made from Atlantic, Gulf and Pacific coast points. The great bulk of the original order for 50,000 tons given by the Japanese government to the Illinois Steel Co. has gone forward.

Although the steamer J. H. Outhwaite and consort H. A. Barr, stranded Tuesday off False Presque Isle, Lake Huron, were not wooden vessels of the largest type, they were among the best vessels of their kind on the lakes. No ships have ever been more carefully kept up, as the vessel man says in referring to repairs, than the fleet to which the Outhwaite and Barr belong, and of which W. C. Richardson of Cleveland is manager. The insurance companies will have no cause for complaint on account of losses to be paid as a result of this accident.

age. A part of the decision was to the effect that "if the consignee has a right to demand that the cargo shall be delivered at a particular dock, he is not guilty of fault in requiring the libellant's vessel to take her turn with other waiting vessels."

Replacing a Broken Propeller Blade.

"I recently ran across what I considered a rather smart piece of work," says James J. Salmond of Port Richmond, N. Y., in a communication to the Canadian Engineer. "I was down at the wharf of the American line in New York city, and noticed lying on the wharf a propeller blade, the tip of which had about 2 feet knocked off. I made inquiry, and discovered that it had been taken from the starboard propeller of the steamer New York, which vessel was then alongside the wharf, being in the course of preparation for sea. It transpired that the job of removing this blade commenced just about twenty-four hours previous to the time at which I saw the men removing the gear and tackle used in dry-docking the propeller, as the ship was in wet dock. The work was commenced one morning at 10 a. m., the nuts slacked back, of which there were eight, perhaps 3½-inch diameter, the old blade removed and a new one substituted, all inside a period of about twenty-four hours. One can readily see what a saving is effected by being able to so make it possible to work in this way at a damaged propeller, and at the same time allow the cargo to be worked. I judge the weight of the propeller blade to have been about four tons. I have spent a night even in a dry dock slacking back nuts on jobs of this kind, and I consider this piece of work on the New York quite an example of ingenuity."

Referring to the efforts of the producers of Bessemer pig iron in the Central West, mainly Mahoning valley furnaces, to agree upon some plan of regulating production, the Iron Trade Review says: "A proposition now being considered comes back to what was the starting point with some of the furnace men. After canvassing various plans for curing demoralization, including selling agency and incorporation propositions, the idea now discussed is to have every furnace in the arrangement shut down for a thirty-day period at some time in the next ninety days. This is a simple and effective way of removing surplus and preventing accumulations, and is calculated to test the amount of real desire every furnaceman has to bring out a better condition. It is reported that nearly all valley firms have signified a willingness to co-operate in the movement."

Stage of water in the passage between Bois Blanc island and the Amherstburg shore last week ranged from 17 feet 8 inches to 18 feet 4 inches, according to direction and force of wind.

The Kind of Ships Wanted for the Navy.

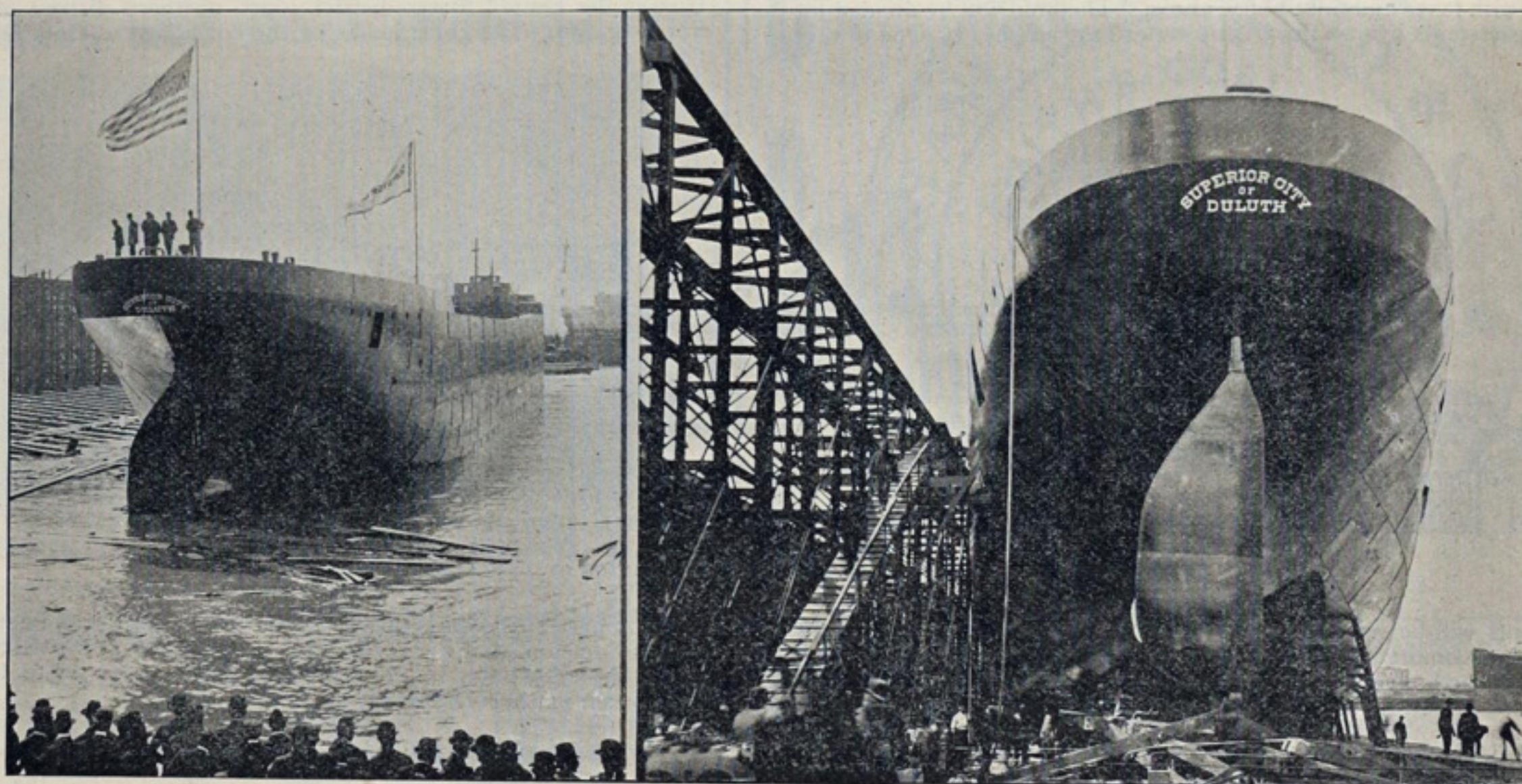
New York, April 20.—In selecting vessels to increase the navy, the board of the United States naval officers which has the matter in charge has been particular about securing those which approach nearest to the ideal cruiser. Speed, adaptability to the purpose intended, the use of iron in the construction of the houses, economical machinery, together with large bunker capacity and fresh water supply, for keeping at sea for a long period of time without the necessity of coaling, etc., have been carefully considered. The vessels of the Morgan and Cromwell lines are conspicuous as having been the first merchant vessels purchased by the government, and it is asserted that they are believed to be the most effective. In this list are included the Creole of the Cromwell line, now named Solace, and the four Morgan line ships, El Norte, El Sud, El Sol and El Rio, now named the Yankee, Dixie, Prairie and Yosemite, as well as the tug El Toro of the latter company, now named Algonquin. All of these vessels have been secured because they possess in a particular degree the elements essential for the purpose they are intended, not least of which are the iron houses, recommending them for hospital purposes as well as for fighting ships. The absence of these particular features is what has deterred the board from purchasing many other vessels in coastwise service, which in some respects are of a superior character, but which would be objectionable on account of damage that would be done if a shot should strike the wooden structures.

It is generally agreed that aside from the big American liners the Solace is the best vessel thus far secured. In urging the purchase of this vessel for her mission of mercy, the medical branch of the navy found that the structural features of the ship formed their strongest argument. She could hurry from the scene of action to land her wounded at the nearest port before the fighting ships could be detached from the squadron. She

Our Ship Material in England.

The recent sale of a large quality of steel plate to Clyde ship builders by the Carnegie company of Pittsburg prompts English journals to again take up the question of competition in the iron and steel trades from American manufacturers. The Glasgow Herald, which gives considerable attention to the ship building industry in Great Britain, says:

"It is beyond question that some American plates have been sold for delivery here, and that more have been offered at a trifle under the current price of local makers. Our imports, not only of American pig iron, but also of American steel billets, in 1897, were considerable, and mark the beginning of a new era in the iron and steel trade. It is possible enough that the extent of these imports has been exaggerated for market purposes. It has, for instance, been the current gossip of the trade that 100,000 tons of American pigs were imported into Liverpool last year, but, as a matter of fact, according to the Board of Trade returns, our entire imports of unmanufactured iron (including bars, bolts and angles) were only 68,139 tons, and of unwrought steel 39,988 tons. Nevertheless American pigs and unwrought steel continue to come to us—pigs alone at the rate of from 8,000 to 9,000 tons per month since the year opened. Now, it is known that the production of American pig iron has been enormously increased, and will this year exceed in magnitude all previous records. It is also known or stated that the requirements of America for finished iron and steel will this year be beyond precedent and quite equal to the absorption of her enormous output of pig iron. At the present moment we seem to be at the dividing of the ways. The consumption of pigs in the States has not yet overtaken the supply, and the production of finished material is still ahead of the demand. This would explain the exports of both crude and finished material to Great Britain at this juncture, without being indicative of anything revolutionary in the trade. Men of experience in



FREIGHT STEAMER SUPERIOR CITY, 450 FEET OVER ALL, LAUNCHED FROM THE LORAIN YARD OF THE CLEVELAND SHIP BUILDING CO., APRIL 13, 1898—ON THE STOCKS AND IN THE WATER.

is now being stripped of all her superfluous wood work and having the necessary alterations made to complete her for the service in which she is to be placed. The Morgan liners are also being stripped of all their interior woodwork. Provision is being made for protecting such parts of their machinery as project above the water line, and port doors are being altered to suit the guns. Other minor changes in them are also under way. Mr. Horace See of New York was the naval architect for all of these vessels.

Cargo Records.—Lake Freight Ships.

Cargoes weighing 6,300 net tons are now quite numerous on the lakes. When the ships of 450 feet over all building at Lorain, and the Rockefeller steamer (476 feet over all) building at West Bay City, go into commission later in the season the 7,000-ton mark will very probably be passed. Following are the highest records up to this time:

Iron Ore—Schooner Amazon, owned by James Corrigan of Cleveland, 5,631 tons gross, or 6,307 net, Duluth to South Chicago, draft of 17 feet 1 inch; steamer Empire City, A. B. Wolvin of Duluth, 5,622 tons gross, or 6,296 net, Two Harbors to Cleveland, draft of 17 feet 2 inches; schooner Polynesia, James Corrigan of Cleveland, 5,477 tons gross, 6,134 net, Duluth to Fairport, draft of 16 feet 8 inches.

Grain—Steel schooner Australia, James Corrigan of Cleveland, 225,000 bushels of corn, equal to 6,328 net tons, Chicago to Buffalo; steamer Crescent City, A. B. Wolvin of Duluth, 225,000 bushels of corn, equal to 6,300 net tons, South Chicago to Buffalo, draft of 17 feet; schooner Amazon, James Corrigan of Cleveland, 205,572 bushels of wheat, equal to 6,167 net tons, Fort William to Buffalo, 16 feet 8 inches draft; steamer Andrew Carnegie, 332,100 bushels of oats, equal to 5,313 net tons, Manitowoc to Buffalo.

Coal—Schooner Polynesia, James Corrigan of Cleveland, 5,654 net tons of bituminous, Cleveland to Duluth, 16 feet draft; steamer Carnegie, Wilson Transit Co. of Cleveland, 5,369 net tons of bituminous, Cleveland to Duluth.

the iron trade are, however, of opinion that American iron has come to stay, and will continue to come to us in one form or other according to the circumstances of the moment—one of which, of course, will always be freights. It may be taken for granted that in present conditions of production here American pigs cannot be brought across to compete with Scotch or English pigs, except when conveyed at a nominal ballast freight. Yet there is nothing to prevent the shipment of American pigs in the ordinary way of business to other countries heretofore accustomed to get their supplies of pig iron from us. However we may look at it, America is now permanently in the international market as a competitor for the supply of iron and steel."

Five Branch Hydrographic Offices.

The following notice from the hydrographic bureau, navy department, is published for the purpose of directing attention to the facilities for improved service from this bureau on the lakes:

"The attention of mariners (not captains alone, but also vessel owners, pilots and mates) is called to the two new branch hydrographic offices on the great lakes. The one at Duluth is located in the Torrey building; that at Sault Ste. Marie is in the News building. These new offices, together with the Chicago office in the Masonic Temple, the Cleveland office in the Arcade building, and the Buffalo office (established just before the close of navigation for the season of 1897) in the Guaranty building, make a total of five branch hydrographic offices on the great lakes. Mariners and others are invited to visit these offices for examination of the files and for consultation with the officers in charge. The co-operation of all mariners is earnestly invited, so that trustworthy information may be derived for publication in the 'Notice to Mariners for the Great Lakes.'"

Mr. C. P. Coleman, formerly general storekeeper of the Lehigh Valley Railroad Co., is now purchasing agent of the Bethlehem Iron Co., South Bethlehem, Pa.

Another Congress, but no Help for Ships.

More than a year ago an organized movement of all the interests connected with shipping in this country was undertaken, at a meeting in Washington, with a view to preparing a bill to be introduced in congress, which should contain provisions adequate to promote the building up of an American merchant marine in keeping with the resources and developments of the country in other directions, and which should at the same time deal fairly with all vessel and ship building interests. The meeting was largely attended by representatives of maritime interests from all parts of the United States, and a committee, of which Mr. Clement A. Griscom of Philadelphia is chairman, was selected to prepare a bill for presentation to the present congress.

It was expected that this committee would succeed in framing a bill that would command support from the shipping interests of the entire country, but it is now more than probable that congress will adjourn without action of any kind on the shipping question. The Cuban difficulties have, of course, taken precedence over all other matters in Washington, but it cannot be learned that the committee of shipping representatives above referred to has even yet succeeded in agreeing upon a measure that would be likely to meet with success. At last accounts they had under consideration a bill prepared by Mr. Eugene T. Chamberlain, United States commissioner of navigation. This bill proposed to place a tax of 50 cents a ton on all vessels entering the ports of the United States outside of a radius of 2,000 miles from the United States. While it would be a violation of treaties for the United States to rebate this tax to American ships, Mr. Chamberlain held that it would be no violation to pay the equivalent of that tax back to the American ships as a bounty. This plan was the main feature of the bill, but it was also proposed to admit to American registry all foreign built ships owned by American

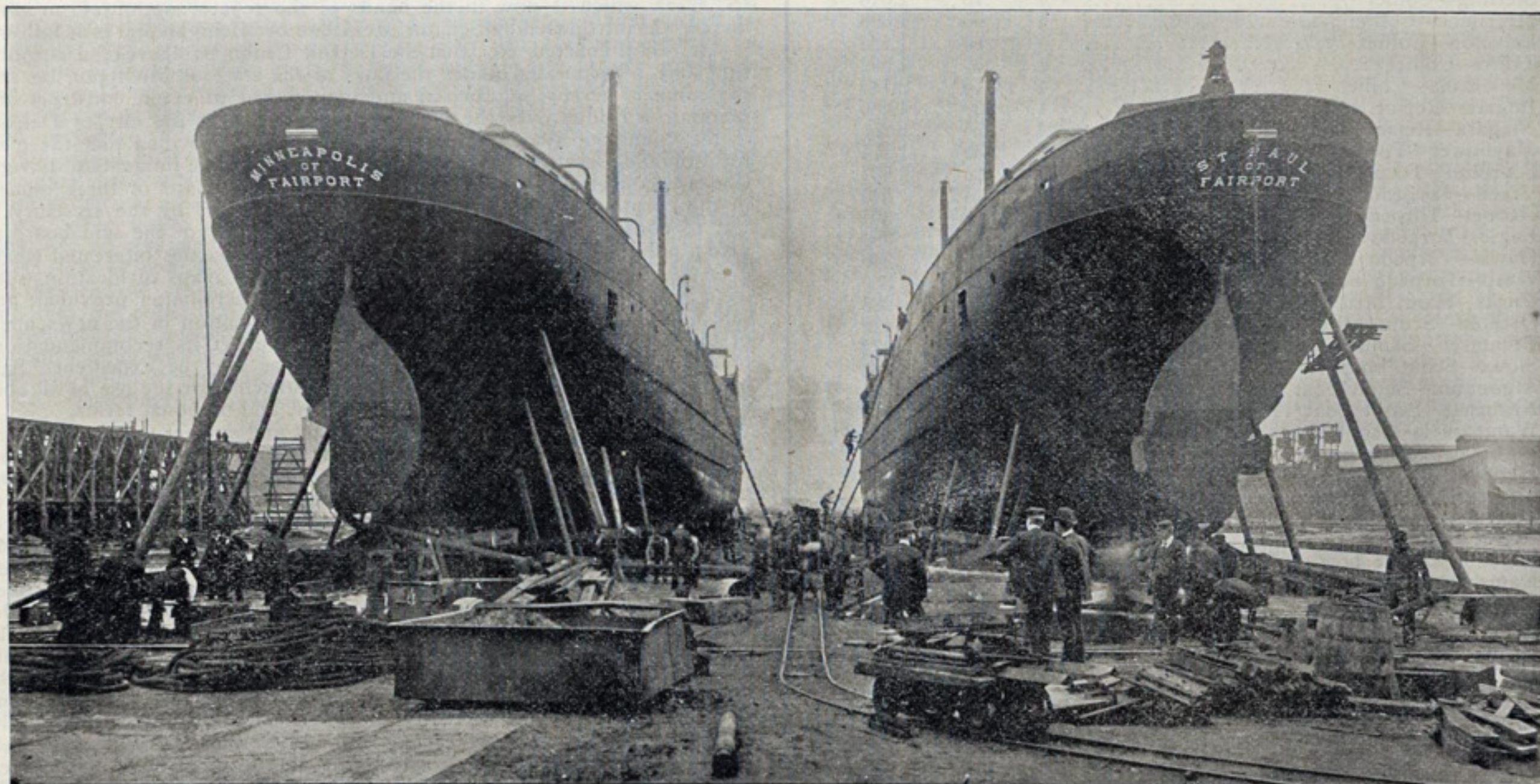
How Capt. Folger Lost the Iowa.

When "Fighting Bob" Evans of the navy was assigned to duty on the light-house board, some time ago, liberal plaudits were bestowed upon him by the correspondents of lake newspapers in Washington, who predicted that his policy on the board would be to encourage appropriations for the light-house service of the lakes. But alike to several other officers of the board who had become acquainted with the great volume of lake commerce and the need of improvements, Capt. Evans has been transferred to duty aboard ship. The story of his transfer to command of the battleship Iowa, as told by a correspondent of one of the Detroit papers, concerns another officer well known on the lakes, Capt. W. M. Folger, who was up to a short time ago in charge of the eleventh light-house district with headquarters at Detroit. Capt. Folger has been given command of the cruiser New Orleans, recently purchased from the Brazilian government. He wanted the Iowa, which is among the finest of the first-class battleships. He made application to the secretary of the navy and had friends working in his behalf. But he had not reckoned with "Fighting Bob" Evans. Capt. Evans was engaged in the innocent light-house duty when the approaching shadow of the coming event, war, loomed up before his vision. One day he limped into the outer office of Secretary Long and sent in his card. He was soon admitted.

"Well, Captain Evans, what can I do for you?" pleasantly inquired the secretary, who had an especial fondness for the doughty hero of several noteworthy episodes, including the dare-devil lead on Fort Fisher.

"Mr. Secretary, I understand that the Iowa is in need of a captain. If there is going to be war I want to be in the thick of it. I want command of the Iowa, and I promise you she will give a good account of herself."

Just one moment their eyes met. Without the least hesitation the



STEEL PACKAGE FREIGHT CARRIERS MINNEAPOLIS AND ST. PAUL, OWNED BY ROBERT RHODES AND OTHERS OF CLEVELAND. AS THEY APPEARED BEFORE LAUNCHING AT THE WORKS OF THE CHICAGO SHIP BUILDING CO.

citizens, within one year after the passage of the act, and to admit, for all time, any foreign-built ship, on condition that her owners would build equal tonnage to that admitted, in the United States. A further bounty, in addition to the bounty rebate of the tonnage tax, was also to be paid to American-built ships. This bounty was to be 20 cents a ton for each American ship entering an American port distant more than 2,000 miles from the United States, and an additional cent a ton to such ships for each 100 miles of additional distance sailed. Commissioner of Navigation Chamberlain explained that his bill would yield \$7,000,000 in revenue, while now the American tonnage tax yields only about \$700,000 annually. He proposed, and the bill provided, that the cost of the light-house service, about \$3,500,000 annually, should be paid out of this fund, and that bounties should be paid to American fishing vessels and their crews of American seamen, in order to thus create "a nursery for American seamen."

Under this plan, it was suggested, the admission of foreign-built ships would please Democrats, and attract their support, while the bounty provisions, it was expected, would command the support of Republicans. Democrats were supposed to be opposed to bounties, and Republicans supposed to be opposed to free ships, so through securing each of these, it was expected that opposition would be stifled and support from both parties secured. Why the bill was not introduced is a mystery. Its success was probably doubted.

A new river steamer, the Onteora, built for the Catskill and New York Steamboat Co., was launched recently at the yards of T. S. Marvel & Co., Newburg. The machinery and boilers were constructed by the W. & A. Fletcher Co. of Hoboken, who took the contract for the entire boat and sub-let the contract for the hull to the Marvel company. The boat is 250 feet over all, 35 feet molded beam, 62 feet over guards and 6 feet draught.

secretary replied: "Capt. Evans, you shall have the Iowa."

That's how Capt. Folger was beaten out of the Iowa. But he is to have the New Orleans, a fine, fast, armored cruiser of the latest type in hull, engines and armament, and there is not the least doubt that when it comes to fighting, Capt. Folger, who also has a reputation as a man who will take back water for nobody, will be found in the hottest part of it.

Improved Car Dump Machine for Lorain.

Lorain, O., April 20.—The McMyler car dumping machine that has been ordered by the Cleveland, Lorain & Wheeling Ry. Co. for the transfer of soft coal from cars to ships at the docks of the company in this port will be in operation not later than June 1. This machine will be an improvement in many respects over the car dumping machines now in use. The improved machine does not elevate the car, but dumps the coal from the car into a pan, which is elevated to any height necessary for allowing it to run into the vessel. While the pan is being elevated the car is turned back onto the track and passes out of the cage, and another car enters by the time the pan is emptied and returned to its position for elevating the coal. It is thought that with this improvement the new machine will handle coal at least 25 per cent. faster than the old type of machine.

The territory traversed by the Cleveland, Lorain & Wheeling road does not admit of this port securing a share of the ore trade equal to that of ports farther down Lake Erie, but the coal business of the road is large, and its dock interests are certainly very ably cared for by the Lorain agent, Mr. E. M. Pierce.

Charts of Georgian bay will be required by most of the captains of vessels of the medium class during the coming season, on account of the increasing traffic in that direction. The Marine Review has in stock at all times the best charts of Georgian bay that are made.

Government Purchases of Ships.

If war with Spain is long-drawn-out it will very probably result in a ship building boom such as this country has never seen. It will give an impetus to ship building that may bring about the upbuilding of the merchant marine for which subsidies have been sought. For more than three weeks past the government has been purchasing vessels for war and transport purposes at such a rate that figures in order to be accurate must be revised daily. Millions are being paid for these vessels, and additional millions are to be expended in carrying out the provisions of a naval appropriation bill now nearing final consideration in congress. The naval board entrusted with the purchase of auxiliary ships has practically exhausted the available supply of suitable vessels on the coast and is even now looking to the lakes for tugs and other small vessels, having been instructed to recommend 100 or more vessels of this kind. A partial list of the vessels thus far secured is as follows:

PARTIAL LIST OF AUXILIARY SHIPS FOR THE NAVY.

Name and Class.	Guns.	Men.	Tonnage.
St. Paul—Cruiser	24	400	11,629
St. Louis—Cruiser	24	400	11,629
Paris—Cruiser	24	400	10,668
New York—Cruiser	24	400	10,674
Yorktown—Cruiser	14	250	2,898
Venezuela—Cruiser	14	250	2,842
Yumuri—Cruiser	12	260	3,496
Yankee—Cruiser	22	350	4,659
Yosemite—Cruiser	22	350	4,522
Dixie—Cruiser	22	350	4,659
Prairie—Cruiser	22	350	4,664
Saturn—Collier	4	75	2,268
Sterling—Collier	4	75	2,016
Merrimac—Collier	4	65	1,398
Lebanon—Collier	4	65	1,485
Zafiro—Collier	4	60	1,062
Menemsha—Collier	4	75	2,743
Juniata—Repair ship	4	250	4,080
Niagara—Repair ship	4	250	2,265
Mayflower—Torpedo gunboat	12	139	1,475
Scorpion—Torpedo gunboat	10	125	627
Vixen—Torpedo gunboat	10	125	545
Hornet—Torpedo boat destroyer	6	25	301
Eagle—Torpedo boat destroyer	6	28	364
Hawk—Torpedo boat destroyer	6	23	240
Wasp—Torpedo boat destroyer	6	28	380
Uncas—Scout boat	4	25	283
Osceola—Scout boat	10	75	420
Tecumseh—Scout boat	4	25	272
Sioux—Scout boat	2	12	111
Algonquin—Scout boat	1	10	65
Nezinsett—Scout boat	1	12	115
Wampatuck—Scout boat	6	25	323
Potomac—Scout boat	4	25	280
Hercules—Scout boat	2	25	380
Choctaw—Scout boat	2	20	315
Peerless—Scout boat	1	20	250
Active—Scout boat	1	20	273
Vigilant—Scout boat	1	20	261
Namshaw—Store ship	4	75	2,200
Solace—Hospital ship	..	25	3,800
Mangrove—Dispatch boat	1	30	250
Bache—Dispatch boat	1	30	182
Blake—Dispatch boat	1	30	234
Alice—Steam lighter	..	10	100
Suane—Light-house tender	2	..	540
Maple—Light-house tender	4	..	392
America—Light-house tender	4	..	632
Daniel Manning—Revenue cutter	6	47	900
William Windom—Revenue cutter	4	44	398
Levi Woodbury—Revenue cutter	4	39	330
Alexander Hamilton—Revenue cutter	2	39	223
Lot M. Morrill—Revenue cutter	3	39	288
Hudson—Revenue cutter	1	11	128
James Guthrie—Revenue cutter	1	10	98
Hugh McCulloch—Revenue cutter	6	53	1,280
Calumet—Revenue cutter	1	11	123
Walter Q. Gresham—Revenue cutter	4	47	777
Samuel Dexter—Revenue cutter	4	40	300
Accomac—Revenue cutter	4	39	315
Perry—Revenue cutter	3	30	290
U. S. Grant—Revenue cutter	5	39	263
Thomas Corwin—Revenue cutter	4	40	213
Richard Rush—Revenue cutter	4	40	300

RECAPITULATION.

Total number of vessels..... 64
 Class of vessels—Cruisers, 11; colliers, 6; repair ships, 2; torpedo gunboats, 3; torpedo boat destroyers, 4; scout boats, 13; store ship, 1; hospital ship, 1; dispatch boats, 3; steam lighter, 1; light-house tenders, 3; revenue cutters, 16.

Total guns carried..... 424

Total men in crews..... 6,250

Total tonnage..... 111,493

This list does not include any of the vessels of war purchased from Brazil and from European ship yards. Neither does it include several large merchant vessels, notably the Allan line steamer Lucerne and the Juniata of the Merchants' & Miners' line, together with a dozen or more Atlantic coast yachts, purchased within the past few days. A late announcement, also, is to the effect that the government has purchased through Charles R. Flint of New York the Russian cruiser Nichteroy.

From even this summary of government purchases it will be seen that unless these vessels are soon to be again placed on the market and fall back into the hands of their original owners, there is every prospect of

a boom in ship building and a drift of American capital to new ship building plants. In any event the present war conditions will enable coast lines to rebuild their fleets. Probably some of them under pressure of immediate demand for ships to replace those that have been sold will make arrangements for the transfer of steamers from the lakes to the coast. Many of the lake vessels could be cut in two and towed through the Canadian canals to Montreal, and there reunited. With such alterations as their use on salt water would necessitate, they would then become available to replace in the coastwise service the vessels taken by the government. As such vessels would be destined for merchant service there would be no objection from Great Britain to their passage through the Canadian canals.

It is understood that each of the American liners, St. Louis, St. Paul, New York and Paris, will cost the government \$2,500 a day while under charter. The charter may be terminated by the government by buying the vessels outright.

Detroit River Bridge.

Officials of the Lake Carriers' Association are expecting that they will soon be called upon to again oppose the construction of a bridge over the Detroit river. Promoters of the Union Bridge Co., a Michigan corporation organized a short time ago, are at work in Washington and have succeeded in having the war department pass upon and make changes in an elaborate bill which they prepared, and which provides for the appointment of another board of army engineers to take up the bridge question. It is not probable that the bill will be given consideration before the adjournment of congress, but it represents in full the latest plans of the bridge advocates and is therefore being watched carefully by Attorney Goulder and other representatives of the vessel interests. The bill (S. 4278), which is now in the hands of the senate committee on commerce, was introduced by Senator McMillan of Michigan and is as follows:

1. Be it enacted, etc., that the Detroit Union Bridge Co., a corporation duly incorporated under the laws of the state of Michigan, be, and the same is hereby, authorized and empowered to erect, construct and maintain a bridge over the Detroit river at or near the city of Detroit, in the county of Wayne and state of Michigan; provided that the plan, location and elevation of the said bridge, so far as the interests of navigation are concerned, shall be recommended by a board of three officers of the corps of engineers, which shall be appointed by the secretary of war to consider the same; and it shall be the duty of the said board to give a public hearing in the city of Detroit to all parties interested whenever the design and drawings of said bridge, and maps of location, shall have been submitted to the secretary of war as hereinafter provided; and said board shall give reasonable notice by publication in the newspapers of the time and place of such hearing, and report its recommendations to the secretary of war as soon thereafter as may be expedient. Said bridge and approaches thereto shall be constructed for the use of all connecting railroads on either side of said river, and on equal terms.

2. That any bridge built under this act and subject to its limitations shall be a lawful structure and shall be recognized and known as a post route, upon which also no higher charge shall be made for the transportation over the same of the mails, the troops and munitions of war of the United States than the rate per mile paid for the transportation over the railroads or public highways leading to the said bridge, and it shall enjoy the rights and privileges of other post roads in the United States.

3. That said bridge shall be made with not more than three unbroken and continuous spans between the bulkhead line as established on the Detroit side of the river and the bulkhead line as established or to be established on the Canadian side of the river. The length of the main channel span shall be not less than 1,200 feet in clear width between the masonry piers measured at a point 25 feet below extreme low water, and shall be located by the secretary of war as heretofore provided. The height of the superstructure above high water shall be fixed and determined by the board of engineers provided for in section one of this act; and the bridge shall be at right angles to, and its piers parallel with, the current of the river. The bridge shall be located on the Detroit river, between Fort Wayne, in the city of Detroit, and a point not more than 2½ miles from the southwesterly limits of said city as now established. No bridge shall be erected or maintained under the authority of this act which shall at any time unreasonably obstruct the navigation of said river, and if any bridge when so erected shall, in the opinion of the secretary of war, prove to be such obstruction to navigation, he is hereby authorized to cause such change or alteration thereof to be made as will effectually obviate such obstruction, and to this end, if necessary, may cause said bridge to be removed. Such alterations shall be made and said bridge removed at the expense of the owner or owners of said bridge. During the original construction, and in carrying out any authorized changes or repairs of said bridge, the navigable channel of the river shall not be obstructed to a greater extent than, in the opinion of the secretary of war, is absolutely necessary, and such lights and buoys shall be kept on all cofferdams, piles and other obstructions as he may require for the security of navigation. In case of any litigation arising from obstruction or alleged obstruction to the free navigation of said river, caused or alleged to be caused by said bridge, the circuit court of the United States of the circuit within which said bridge may be located shall have jurisdiction thereof; provided that nothing in this act shall be so construed as to repeal or modify any of the provisions of law now existing in reference to the protection of the navigation of rivers or to exempt this bridge from the operation of the same.

4. That all railroad companies in this country or Canada desiring the use of said bridge shall be entitled to equal rights and privileges relative to the passage of railway trains or cars over the same and over the approaches thereto, and the rates charged for the use of said bridge shall be the same for all companies alike, and without discrimination of any kind in favor of or against either over the whole length of the bridge and approaches; provided that if any question of difference arises at any time between said bridge company and any railroad company using said bridge or desiring its use in respect of the rate of compensation to be paid for such use, or in respect of any other matter pertaining to such

use, and the parties cannot agree in regard to the same, such question shall be determined by the secretary of war on application to him by either party to such matter of difference and due notice to all other parties interested. The parties shall be heard by the secretary, and they shall have the opportunity of producing testimony. The determination of any such question by the secretary of war shall be conclusive on the parties; provided that his decision may from time to time, as becomes necessary, be revised and modified by him.

5. That any bridge authorized to be constructed under this act shall be built and located under and subject to such regulations for the security of navigation of said river as the secretary of war shall prescribe, and to secure that object the said company or corporation shall submit to the secretary of war, for his examination and approval, a design and drawings of the bridge and a map of the location, giving for the space of 2 miles above and 2 miles below the proposed location the topography of the banks of the river, the shore lines at high and low water, and at least one medium stage, and the soundings, accurately showing the bed of the stream, the location of any other bridge or bridges, and shall furnish such other information as may be required for a full and satisfactory understanding of the subject; and until the said plan and location of the bridge shall have been favorably recommended by the board of engineers hereinafter provided for and approved by the secretary of war the bridge shall not be built or commenced; and should any change be made in the plans of said bridge during the process of construction, such change shall be subject to the recommendation of the board of engineers and to the approval of the secretary of war, and shall not be made or commenced until the same is approved; and the said company or corporation shall cause to be displayed on said bridge, from the hours of sunset to sunrise, or at other times, such lights or other signals as may be prescribed by the light-house board.

6. That it shall be the duty of the secretary of war, on satisfactory proof that a necessity exists therefor, to require the company or persons owning said bridge to cause such aids to the passage of said bridge to be constructed, placed, and maintained at their own cost and expense, in the form of booms, dikes, piers, or other suitable and proper structures for the guiding of rafts, tows, steamboats and other water craft safely through the passageway, as shall be specified in his order on their behalf, and on failure of the company or persons aforesaid to make, establish and maintain such additional structures within a reasonable time the said secretary may cause the said bridge to be removed at the expense of the owners thereof.

7. That if the actual construction of the bridge hereby authorized shall not be commenced within three years from the time this act takes effect, and be completed within six years after the same date, then this act shall be void, and all rights hereby conferred shall cease and determine; and that the construction shall not be commenced until the Dominion government has authorized the construction and maintenance of that part of said bridge which shall occupy that portion of the said Detroit river which is under the jurisdiction of said Dominion government.

8. That the right to alter, amend or repeal this act is hereby expressly reserved.

Development of Car Dump Machines.

The Review finds occasion to prepare information regarding the number, capacity, etc., of car dump machines now used in the transfer of bituminous coal from railway cars to vessels at Lake Erie ports. In answer to a request for this information, the McMyler Manufacturing Co. of Cleveland goes into the development of machines built at their works since the first end-dump was erected at Ashtabula. A letter from them dealing with this subject follows:

"We furnished Pickands, Mather & Co., on the docks of the Lake Shore & Michigan Southern Ry., Ashtabula, the first car-dumping machine built by us, which was what we term an end-dump machine. This machine, which has been described in the Review, has worked very effectively ever since, and without any delays or expense that we know of, except it was found after the machine was first built that it would be safer with cast steel gearing than with cast iron, and the first winter, after working one season, we changed all gearing from cast iron to cast steel. After this was completed, however, there was no expense other than the operating expense attached to the machine, nor has there been up to the present time, except for the haulage rope which has to be replaced, depending a good deal on the amount of work done. The capacity of this machine is an average of fifteen cars per hour. At times about twenty-five cars per hour have been loaded when coal could be let into the boat without trimming. Of course, the trimming holds good in all cases; that is, the machine cannot put the coal in any faster than the coal is trimmed in the boat.

"The second machine was put up for the Pittsburgh, Fairport & North Western Dock Co. at Fairport, and was a duplicate, in most respects, of the one of the previous year, except that the hydraulic pump arrangement was doubled, six plungers being provided instead of three in the first machine. Another change was in the telescopic chute, which went to the bottom of the boat and carried the coal with it, to avoid breakage. This machine has done excellent work and with little or no expense since erected in the early part of the season of 1895.

"The third machine was for the Cuddy-Mullen Coal Co. and was erected on the lake front docks of the Pennsylvania Co. at Cleveland. It is of the side-dump type. This machine seemed to accomplish every purpose required, and from the start it was always ready for duty, and surprised a good many people as to its working capacity and its stability and readiness for work at all times. In a great many instances records of thirty cars per hour have been attained with this machine, and the average capacity has been about fifteen cars per hour. We built two machines of the same type, last year, one for the Valley Coal Transfer Co. at the Seneca street bridge on the Cleveland, Terminal & Valley road, and one for the Pennsylvania Co. at Erie. The difference between these two machines and the Cuddy-Mullen machine was simply that of putting in a bulkhead in the concentrating pan, which receives the coal from the car. As the bulkhead was short of the length of the pan in line with the car (about 3 feet at each end) we succeeded in overcoming the letting of

the center of the coal, which had the best line of travel, and let the end coal from the cars travel down the line of the sides of the pan until the car was emptied, and then the center received it and automatically opened a door at the end of the pan to let the coal into the hold of the boat. We find this very effective for clearing the car, as in the first case the center coal would move down the center of the pan, having the least resistance, on account of the pan being concentrated in a distance of 20 feet at about an angle of 45 degrees.

"We attempted in these machines to introduce a bucket for lowering the coal from the end of the pan into the hold of the boat. Our experience has been very unsatisfactory, and, of course, expensive, and we had to abandon the bucket entirely and put on a telescopic chute, which has a very good range for distribution of coal, and when operated properly, which is very easily done, makes a very efficient arrangement for lowering the coal into the boat. This chute may be operated athwart the vessel, at the will of the operator, so as to distribute the coal towards the inner or outer side of the ship, according to the necessity of trimming, and can be shortened up, when telescoped, to the normal length of the first link, which is about 6 feet.

"We are building two machines this year, one for the Pittsburgh & Conneaut Dock Co. at Conneaut, and one for the Cleveland, Lorain & Wheeling Ry. at Lorain. We expect to have these machines ready for operation about the 10th to the 15th of June. We have had to redesign the machines to meet the conditions which have been changing in lake vessels of late years. We found, after having contracts for these machines, that there are some boats now being built with fuel hatches 32 feet above the water. The highest hatches, up to this year, have been about 20 feet. These were in most cases the long hatches athwartship, but the fuel hatches, as they are now being built, are narrow hatches and very much higher. We found it necessary, therefore, to devise machines to go at least 15 feet higher with cradle and cars, and this necessitated our making the main post, or the post that carries the entire weight of the car, cradle and load, about 75 feet high, as against only 60 feet in other cases. To avoid this and to provide better distribution of the load on the docks—as in former cases we were within 3 to 4 feet of the edge of the dock, carrying the entire load—we now distribute the load on eight posts, the posts where the cradle is pivoted being about 30 feet from the edge of the dock, thus giving better distribution of the weight on the dock front and a much stiffer and better bracing of the machine.

"Another feature is the turning of the car from a stationary pivot, similar to the other side dump machines, except in the vertical movement. As the car tips over it empties into a pan, the side of which nearest the car lies in a horizontal position. As the load passes from the car into the pan, the latter recedes until it takes the coal and assumes a vertical position; then the car is returned and the cradle takes its position to receive another car. While this is being done, the pan, which may be called a hopper, is lifted vertically until it meets the height at which the chute is set. This height is just enough to give the chute a slope and sufficient angle to let it into the hold of the boat. The chute is about 8 feet wide at the upper end, where the coal enters, and 3 feet wide at the hatch. It is also provided with a telescopic chute to manipulate the trimming as much as possible and to hold the coal from excessive speed or force, in order to avoid breakage."

Cost of Battleships in the United States.

The contract price for hull and machinery (not armor or armament) of United States battleships built or building was as follows:

Indiana	\$3,020,000
Massachusetts	3,020,000
Oregon	3,180,000
Iowa	3,010,000
Kearsarge*	2,250,000
Kentucky*	2,250,000
Alabama*	2,650,000
Illinois*	2,595,000
Wisconsin*	2,674,950

* Under construction.

In the first four ships this price was materially increased by changes and additions authorized during construction. For the five ships now under construction, however, changes and additions have been kept down to a minimum, and there is no prospect of materially increased cost over contract price. It is found, however, that necessary work not covered by the contract will amount to from \$150,000 to \$175,000. The Kearsarge and Kentucky were contracted for at an exceptionally low price. The Alabama class cost some \$400,000 more each, and, making allowance for cost beyond the mere hull and machinery, approach within \$200,000, or less, the limit of \$3,000,000.

The lower branch of the Ohio legislature has passed a bill that is of special interest to iron ore dealers and vessel owners of Cleveland. The aim of the measure is to tax iron ore on Lake Erie docks and to prevent Cleveland vessel owners listing their property for taxation in small towns where the rate of taxation is lower than in Cleveland. That part of the bill bearing upon the taxation of ore on dock defines property in transit as that on board cars or boats, and while being moved through and beyond the boundaries of the state. Only that property is exempt. The clause relating to vessels provides that they shall be listed where the owners reside. The measure is undoubtedly prompted by the administration of city affairs in Cleveland.

The United States dredge Maumee and tug Thos. Spear, with their attendant scows, have been as usual undergoing necessary repairs at Toledo during the past winter. The dredge has begun work at Toledo, and will, about May 12, start for other harbors, where urgent need may be found to exist for immediate dredging at their entrances. The steamer Visitor, purchased last fall, has been refitted for use of the survey and inspection party under orders of Col. Jared A. Smith, corps of engineers, U. S. A. She retains her name but is now enrolled as the property of the United States. She will be used by a field party on the general outside work in the Cleveland district, extending from Monroe to Conneaut.



DEVOTED TO LAKE MARINE AND KINDRED INTERESTS.

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The books of the United States treasury department on June 30, 1897, contained the names of 3,230 vessels, of 1,410,102.60 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1897, was 399, and their aggregate gross tonnage 769,366.68; the number of vessels of this class owned in all other parts of the country on the same date was 314, and their tonnage 685,709.07, so that more than half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1897, was as follows.

	Number.	Gross Tonnage.
Steam vessels	1,775	17,235.45
Sailing vessels and barges.....	1,094	394,888.87
Canal boats	561	37,978.28
Total	3,230	1,410,102.60

The gross registered tonnage of the vessels built on the lakes during the past five years, according to the reports of the United States commissioners of navigation, is as follows:

Year ending June 30, 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,352.70
" " " 1896.....	117	108,782.38
" " " 1897.....	120	116,936.98
Total	611	403,327.91

ST. MARY'S FALLS AND SUZ CANAL TRAFFIC. (From Official Reports of Canal Officers.)

	St. Mary's Falls Canals.			Suez Canal.		
	1897	1896	1895	1897	1896	1895
Number of vessel passages.....	17,171	18,615	17,956	2,986	3,409	3,434
Tonnage, net registered.....	17,619,933	17,249,418	16,806,781	7,899,374	8,590,284	8,448,383
Days of navigation.....	234	232	231	365	365	365

Under the head of increase in the navy, the naval appropriation bill now nearing final action in the senate, contains, in addition to the three battleships provided for in the bill as it came from the house, a provision for the construction of four harbor defense monitors to cost \$1,250,000 each. The number of torpedo boat destroyers is increased from twelve to sixteen, their displacement increased from 350 to 400 tons each, and total cost, together with twelve torpedo boats, is increased from \$4,680,000 to \$6,900,000. The appropriation for armor for the vessels authorized is increased from \$5,662,800 to \$7,162,800, and for equipment from \$175,000 to \$375,000. To the paragraph authorizing the construction of four timber dry docks at Portsmouth, N. H., Boston, League island and Mare island, a provision is added giving the secretary of the navy discretion to build either or all of them of granite, in which case the limit of cost for each is increased by \$200,000.

There is still a lively interest in the progress made toward bringing dry dock No. 3, sometimes called the Walsh dry dock, at the Brooklyn navy yard, into condition to receive a battleship. The Army and Navy Journal learns that leaks have been developed through the altars near the abutments on the easterly side of the dock, which are probably due to an unusually high tide. Strenuous efforts are being made to overcome this difficulty by building a concrete wall to shut out the tide water. The caisson is now in the outer still, but does not fit; it is wedged in every possible way to prevent the passage of water around it into the dock and the inner sill is being prepared to receive the caisson. Whether the caisson will fit properly in the inner sill or not remains to be seen. The naval constructor in charge of this work, it has been said, hopes to have the dock ready to receive a battleship by May 1, but it is evident that enough work remains to be done to make it certain that the dock cannot be utilized before the middle of June, if then.

It is understood that Mr. Charles H. Keep, secretary of the Lake Carriers' Association, who was recently appointed secretary of the Merchants' Exchange at Buffalo, did not take the place into consideration until he had satisfied himself, by consultation with leading members and officers of the exchange, that the performance of his duties to that body would not conflict with his work as secretary of the Lake Carriers' Association. Indeed, it was the opinion of the officers of the Buffalo organization, as well as officials of the Lake Carriers' Association, that the nature of the duties pertaining to both positions was such that they could be advantageously performed by the same person, and that one position would rather help than hinder a satisfactory performance of the work connected with the other.

Another plan is suggested for supplying coast cities, especially New Orleans and Gulf points, with torpedo boats from the lakes. The main objection to the building of small war vessels on the lakes has been that England would not permit the passage of these vessels through the canals of the St. Lawrence to the seaboard. Now it is suggested that vessels like the Mackenzie and Cushing—100 feet long, 13 feet wide and 9 feet deep—might be built, say in Cleveland, and transported by rail to the Ohio river at Cincinnati, from which point their passage to the gulf would not be a difficult matter. The manager of one of the railways running into Cleveland says there is no reason why boats of the dimensions noted could not be transported to Cincinnati by rail.

A Duluth correspondent, referring to improvements in iron mines and railways of the Minnesota mining region, says: "The Duluth & Iron Range road is using its new 19-mile line. The line increases the distance slightly, but lessens grades so that the locomotive load is increased more than 50 per cent. The new dock at Two Harbors is not yet ready, but will be in June. Dock extension for the Duluth, Mesabi & Northern road is about ready for use. Some 250 30-ton steel ore cars have been delivered by the Pullman company. The road has received a 90-ton Bucyrus steam shovel which is at work on the line. Considerable improvements are being made to the road's shops and yards near Duluth, and matters are in excellent shape for an enormous ore traffic under the charge of Manager Olcott."

If there is any truth in the semi-official announcement from the navy department that orders for two war vessels are to come to this country from Russia, it would seem that Mr. Charles H. Cramp's latest search for contracts away from home has proven fruitful. The Washington dispatch says: "The contract with the Cramps is practically closed. The vessels are to be battleships of more than 12,000 tons displacement, 16 knots speed, and mounting the heaviest battery carried on vessels of their displacement afloat. Plans of the proposed ships have been received here and those who have seen them say they provide for vessels that will prove to be the equal and probably the superior of the Iowa, the best fighting ship now in the American navy, and of nearly 1,000 tons less tonnage than the Russian vessels."

Reports from Duluth regarding grain shipments from the head of the lakes this season are not encouraging to vessel owners. One correspondent says: "There is so far chartered out of Duluth vessel room for only about 2,000,000 bushels of grain, and wheat here is unusually scarce. It is estimated that receipts of grain here before September will be less than 2,500,000 bushels. Indeed, a good many western farmers are already sending to the elevators in Duluth and Minneapolis for seed with which to sow their farms, and it is estimated that 5,000,000 bushels of wheat will be shipped back from these cities to the farms this spring. Considering this, it is scarcely likely that the farmers have much wheat for sale."

The Swedish merchant navy, not including vessels under 20 tons, numbered at the end of 1896, for which year official statistics are only now available, 2,013 sailing vessels, with an aggregate tonnage of 290,855 tons, and 756 steamers, with an aggregate tonnage of 205,964 tons, making a total of 2,769 vessels, with 496,819 tons; this shows an increase in tonnage of 13,816 tons, as compared with the previous year, although there is a marked decrease in both number and tonnage of sailing vessels. Nearly the whole of the increase in steamer tonnage has been brought about by purchase from abroad.

One of the four wooden ships building at the works of James Davidson, West Bay City, will probably be launched Saturday and the others will follow rapidly. They are all nearing completion, and as usual with Davidson vessels, they will be practically ready for service when launched. There are two steamers, each 315 by 44 by 26 feet, and two schooners, each 312 by 45½ by 26 feet. The steamers have triple expansion engines with cylinders of 16, 28 and 42 inches diameter by 36-inch stroke, built by S. F. Hodge & Co. of Detroit, and Scotch boilers (two each) of 12 feet 3 inches by 12 feet.

A Sault river collision case that is of long standing in the courts was argued before the United States circuit court of appeals at Cincinnati last week. The collision occurred in 1891 and the vessels involved are the steamers Ohio, Mather and Siberia. In the lower court damages were divided, one-third to each. A decision from the court of appeals is expected shortly. The Ohio is represented by John C. Shaw and C. E. Kremer; the Mather by James H. Hoyt and W. C. Wisner, and the Siberia by Harvey D. Goulder and F. H. Canfield.

One of the new torpedo boats, the Morris, built by the Herreshoffs of Bristol, R. I., is said to have attained a speed of 24.02 knots on official trial in Narragansett bay on Tuesday last. The steam pressure was 190 pounds and the revolutions 440. Only 21½ knots was required in the contract for this vessel. The boilers of this vessel are capable of 250 pounds pressure, and her builders say that under more favorable conditions she will make 25 knots.

Investigation thus far made by the canal board appointed by the governor of New York to make inquiry regarding the recent expenditure of \$9,000,000 on the state canals has resulted in eliciting the probable fact that the contemplated improvements on the Erie and Champlain canals will cost altogether more nearly thirty millions of dollars than the mere nine millions first asked for.

More names for auxiliary cruisers are announced by the navy department. The steamship New York will be the Harvard, the Paris will be the Yale, the Venezuela the Panther and the Yumuri the Badger. The Yorktown and St. Louis will retain their present names.

An allotment of \$75,000 has been made from the national defense appropriation to the light-house service of the treasury department, which will be expended in carrying out the scheme of joint coast defense signal service formulated by Lieut. J. H. Gibbons, U. S. N.

Every navy yard in the country has been directed to work to its full capacity in preparing ships under repair for service, and those where only the usual hours have been observed have been ordered to begin night work with all the men that can be used to advantage.

The reported consolidation of the Cleveland-Cliffs and Lake Superior iron companies is an old story. Cleveland officials of these companies say there is nothing in the rumor.

A board of naval officers has been appointed to inspect the submarine torpedo boat Holland, with a view to her purchase by the government.

Cost of Big Cruisers in England.

Orders for four armored cruisers were given out by the British admiralty recently at prices that are very low. The successful bidders were: Fairfield Ship Building Co. of the Clyde, two ships at \$2,450,000 each; Vickers, Sons & Maxim, Barrow, one at \$2,460,000; Clydebank Engineering & Ship Building Co., one at \$2,515,000. The armor is to be provided in each case under separate contract. These vessels will be 440 feet in length by 69½ feet beam by 26¼ feet draught, and with a displacement of 12,000 tons. They are to be fitted with thirty boilers of the Belleville type with a working pressure of 300 pounds, reduced to 250 pounds at the engines. The engines of each vessel are to indicate 21,000 horse power, with cylinders 36 inches, 59 inches, 68 inches and 68 inches by 48 inches stroke, and to drive the vessel at a speed of 21 knots. The Fairfield company are to deliver one cruiser in thirty months and the other in thirty-three months; Messrs. Vickers are to deliver their vessel in thirty-three months; and the Clydebank company are to deliver theirs in thirty months.

Contracts for engines for three battleships about to be laid down in government dock yards were also let to Earle's Ship Building Co. of Hull, Messrs. Maudslay, Son & Field of London, and Messrs. Laird Bros. of Birkenhead. These contracts are for twin-screw, triple-expansion, three-cylinder engines for each ship, to indicate 15,000 horse power with 108 revolutions per minute, equal to a piston speed of 918 feet. The cylinders will be 31½ inches, 51½ inches and 84 inches diameter, with a stroke of 51 inches. The boiler equipment will be twenty Bellevilles for each ship. These are to be fitted with economizers, and are to have 37,000 square feet of heating surface, or, say, 2½ square feet per indicated horse power, and 1,168 square feet of grate area—roughly, 13 indicated horse power per square foot of grate. The speed trials are expected to show 18 knots, the vessels displacing 15,000 tons, of which the hull, including 6 inches of specially hardened nickel steel broadside armor, accounts for 9,980 tons.

New Battleship Alabama.

The determination of the Cramps to launch the battleship Alabama about May 18, somewhat in advance of expectations of the navy department, is said to be due to the probability of a big order being secured from the Russian government. Miss Morgan, daughter of United States senator Morgan of Alabama, will probably christen the new ship. The Alabama will be the first in the water of the three first-class seagoing battleships contracted for in October, 1896. The other two, the Wisconsin and Illinois, are being built at San Francisco and Newport News. All three are identically alike. The length of the Alabama on load water line is 368 feet, extreme breadth 72 feet 5 inches, mean draught 23 feet 6 inches, and displacement at that draught 11,525 tons. She will have two vertical inverted three-cylinder triple expansion engines driving twin screws, estimated to develop 10,000 indicated horse power under a moderate forced draught. Her guaranteed speed is to be 16 knots. The boilers are to carry 180 pounds pressure. The armament will be four 13-inch breech-loading rifles, mounted in pairs in two elliptical turrets on the middle line, one forward and one aft of the superstructure; fourteen 6-inch rapid-fire breech-loading rifles, mounted in sponsons, and a secondary battery of sixteen 6-pounder and four 1-pounder rapid-fire guns, together with one Gatling and one field gun. She will also have four torpedo tubes. The side armor is to be 16½ inches thick at the top of the belt, tapering to 9½ inches at the bottom. In the turrets the port hole plates will be 17 inches thick and other plates 15 inches. Inside of this will rise a protective deck, with armor 4 inches thick on the slopes aft, 3 inches forward and 2¾ inches on the flat top.

A Veteran Ship Builder.

Stephen R. Kirby, father of Frank E. and F. A. Kirby of the Detroit Dry Dock, has a great many friends in the lake region who call on him when they go to New York. Mr. Kirby is always very much interested in affairs of the lakes. The Marine Journal of New York says of him:

"We were pleased, a few days ago, to greet Stephen R. Kirby, one of the most prominent naval architects and engineers this country had just before and some time after the war. Mr. Kirby was engineer-in-chief for Jesse Hoyt in building vessels and elevators on the great lakes and at this port, with an office several years ago in the building that the Marine Journal now occupies. In 1879-80 the editor of this paper was a member of the United States board of supervising inspectors of steam vessels with Mr. Kirby, who represented the New York district. His appointment came about through the politicians not being able to agree upon a man, when John Sherman, who was then secretary of the treasury, selected Mr. Kirby himself to fill the place, vice Addison Low. Mr. Kirby built several revenue cutters on the lakes and has also been interested in two or three ship building plants there, all of which he disposed of. He is still a stockholder in the Detroit & Cleveland Navigation Co., which runs steamers between those two points. This company owns the City of Cleveland, City of Detroit, City of Alpena, City of Mackinaw and City of the Straits. Engines of these boats were built by the W. & A. Fletcher Co. of this city. Mr. Kirby has practically retired from business and is doing his best to prolong the life of an invalid wife, who is with him at the Hoffman house in this city. When Mr. Kirby was with Jesse Hoyt that firm and David Dows & Co. moved nearly all the grain from the west to the seaboard."

General Passenger Agent Schantz of the Detroit & Cleveland line is out with a card pictorially describing the important alterations and improvements made in the four largest steamers in the line during the winter. The card is a notice to ticket agents, and the pictures, in one group, tell them graphically how the company expended a large sum of money on the boats. The rates between Detroit and Cleveland have been reduced from \$2.25 to \$1.50 one way; price of a whole stateroom from \$2.50 to \$1.75; upper berths from \$1 to 75 cents; lower berths \$1.50 to \$1.—Detroit Free Press.

Trade Notes.

One of the largest type of traveling cranes ever built has just been completed by the Brown Hoisting & Conveying Machine Co., and placed in their yards at Cleveland. It is of the balance cantilever type. It is 347 feet long over all and 50 feet high to the under side of the truss, while the highest point is 90 feet above the ground. The crane has a lifting capacity of five tons at the end of the tramways and travels on a special railroad with a 45-foot gauge track by its own engine. When run to its full capacity its load of five tons travels at the rate of 30 miles per hour. When operated under ordinary circumstances it will do the work of fifty men. The entire structure weighs about 300 tons. There are but two traveling cranes of this size now in operation besides the one at the Brown yards. One of them is handling pig iron at the plant of the Punxsutawney Iron & Steel Co. at Punxsutawney, Pa., and the other is at the Detroit works of the Solvay Process Co.

Notwithstanding the fact that the Bethlehem Iron Co., South Bethlehem, Pa., has on its books large orders for finished guns of various calibers up to 12 inches, as well as gun carriages and forgings for guns which are to be completed at the various government yards, the number of orders which the company is taking for merchant work, such as shafting of various descriptions, both solid and hollow, and of plain steel as well as nickel steel, is increasing daily. The products of this well-known concern have a world-wide reputation, as indicated by several contracts for armor plate from the Russian government. Last week the Bethlehem company was asked to quote a price on shafting for a torpedo boat building in Japan. They are the only firm in this country that was asked to compete with such well-known works at Vickers' Sons & Co. of England, Krupp of Germany and Schneider & Co. of France.

A dictionary of marine steam specialties and supplies for every department of a ship could be made by taking an inventory of the stock of the James Reilly Repair & Supply Co., New York, the largest marine supply house in the United States. A walk through their warehouse prompted the remark from one visitor that they had everything from a scrubbing brush to a baby elephant. Among the specialties which they are now pushing is the Bang's oil cup, a Milwaukee invention. The superintending engineer of the International Navigation Co. says it saves about one-third more oil than any other cup. The Reilly company will send a small book on retarders and an alphabetical catalogue to anyone who applies for them.

The Harlan & Hollingsworth Co., Wilmington, Del., has contracted to build a steel tug for the Standard Oil Co. for harbor work at Philadelphia. She will be 90 feet long and will be specially adapted for river work and the protection of vessel property in case of fire. The Philadelphia & Reading Transportation Co. has also placed an order with the Harlan & Hollingsworth Co. for the construction of a tug, a sister vessel to the Gettysburg, recently launched at the ship yard of this company. The dimensions of the vessel will be 170 by 29 by 18 feet.

The Berlin Iron Bridge Co. of East Berlin, Conn., has just completed in New Haven, Conn., a steel bridge 427 feet in length and 52 feet in width, with one roadway and two sidewalks. The approaches on the bridge consist of two deck plate girders. The draw span is 200 feet in length and is operated by electricity, the same means being employed for lighting the bridge throughout. The bridge is of heavy construction, the roadway being paved with vitrified brick adapted to the heavy city traffic.

Sails are treated and made mildew and water-proof by a firm in Jersey City. They have many testimonials as to the advantages of this treatment, but none of them are as effective as that of Wilson & Silsby, the well-known Boston sailmakers. They endorse the treatment heartily. The name of the concern is the Neptune Mildew & Water-Proofing Co., 34 Wilson street, Jersey City, N. J.

New officers of the Neafie & Levy Ship & Engine Building Co. of Philadelphia, elected since Sommers N. Smith went to the company from Newport News, are as follows: President, Matthias Seddinger; vice-president and general manager, Sommers N. Smith; treasurer, Edwin L. Fuller; secretary, J. Neafie Whitaker.

There are three Daimler motor launches owned in Detroit, two in Toledo, two in Chicago and one in Faribault, Minn. They are all giving satisfaction. Anyone wishing to know what their owners think of them can have the information by writing the Daimler Motor Co., Steinway, L. I.

The Marine Journal, New York, says there is little doubt that Mr. H. M. Flagler will contract for a companion ship to the Miami with the Cramps, very soon, if he has not done so already. The new vessel will be 260 by 42 by 16 feet and will have a triple expansion engine.

The Lake Shore Chemical Co., Cleveland, has perfected a sprayer that can be used in connection with their disinfectant. The disinfectant is mixed with water and it does not discolor bedding or walls. It is also an excellent destroyer of small animal life.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store in regular elevators at the principal points of accumulation on the lakes, April 16, 1898:

	Wheat, bushels.	Corn, bushels.
Chicago	5,020,000	15,682,000
Duluth	3,864,000	3,295,000
Milwaukee	84,000	
Detroit	71,000	214,000
Toledo	278,000	1,074,000
Buffalo	662,000	1,255,000
	9,979,000	21,520,000

As compared with a week ago, the above figures show, at the several points named, a decrease of 786,000 bushels of wheat and 1,251,000 bushels of corn.

Subscribers who wish to have the Marine Review delivered to them through the marine postoffice, Detroit, will please notify us at once.

Around the Lakes.

The C. H. Starke Dredging Co. of Milwaukee has purchased the tug Golden.

Tonnage of the Chicago steamer Wm. R. Linn, as fixed by treasury department, is 4328.71 gross and 3196.99 net. Her official number is 145,765.

W. G. Wilmot & Co. of New Orleans, who recently sold to the government a large tug built for them at West Bay City, are said to be negotiating for the construction of another tug.

D. E. Lynn of Port Huron was recently appointed assistant superintendent of the Dunham Towing and Wrecking Co., Chicago. He has just made a trip around the lakes in the interest of the Chicago company.

Lake View Beach life saving station, recently erected near Port Huron, is now manned and in full working order. This station is about five miles to the northward of Fort Gratiot light station, Lake Huron.

C. W. Endress & Son now have one of the finest fishing tugs on the lakes engaged in their Lake Superior business at Whitefish point and Grand Marais. The tug is the C. W. Endress, built at Manitowoc during the winter. She is 92 feet long, 19 feet beam and 8 feet hold, and has a fore-and-aft compound engine with cylinders of 10 and 20 inches diameter and 16-inch stroke.

Ashtabula people are hoping that F. W. Wheeler & Co., builders of steel ships at West Bay City, will establish a branch yard at some point within their harbor and that the construction of a drydock would follow such action on the part of the West Bay City concern. Hon. F. W. Wheeler has looked over the ground and is said to favor the proposition if suitable land can be secured on favorable terms.

Plans of the steel passenger steamer for service between Erie and Buffalo, which is to be built by the Detroit Dry Dock Co. for Eugene McFall and others of Sandusky, have been altered. She will be 10 feet longer than was first intended and will have 2 feet less beam, making her 200 feet keel and 32 feet beam. The plans provide for fine lines with a view to securing high speed. This vessel is not to be completed until June 1 of next year.

The Cleveland branch hydrographic office gives out the following information relating to the wreck of the schooner Groton, which sank in Lake Erie, Nov. 11, 1897, while lying at anchor about 2 miles south-east of Point Talbot, Canada: The tug Snowstorm visited the wreck of the Groton on April 10, and reports that her position is apparently unchanged. The mainmast is unstepped and floating by rigging. The foremast is broken off about four feet above water. The topmasts and one gaff are hanging to rigging. There is twenty-six feet of water on her deck. The hull is apparently breaking up. The wreck is not in the track of vessels passing up and down the lake.

A Lake Marine News despatch from Chicago says: "Why water on Lake Michigan should be from 6 to 8 inches higher than last season, while

it is that much lower on Lake Superior, is one of the unsolved mysteries of lake levels. Boats this season have come down the river and got over the tunnels drawing as much as 18 feet 3 inches. The average stage of water is nearly if not quite 8 inches higher than last year, and will average more than a foot above the average levels of two years ago. Perhaps this will change after the regulation southern winds begin, but thus far the cargoes of outgoing vessels have been materially larger than during the past few seasons."

A story going the rounds in Cleveland marine circles is to the effect that Chris. Grover and Capt. Collier had visions of war in mind when they selected the name of the famous Spanish palace, Alhambra, for one of the freight and passenger steamers which they are to operate between Toledo, Cleveland and Ogdensburg. It is said that their scheme, in event of war, is to run the Alhambra between Cleveland and Rondeau, so as to accommodate any of their faint-hearted Cleveland friends who may want to run over to Canada.

"Fairbanks' Steam Specialties" is a cloth-bound book showing all kinds of valves for every possible service. Water gauges, Hancock inspirators and ejectors also occupy some space in it. Gaskets, packing, and, in fact, almost everything a marine engineer wants, except higher wages, is handled by Fairbanks Co. and its branch houses throughout the United States. An engineer who uses Fairbanks' goods is always free of trouble, and such a condition often brings a raise in salary. So it can be said that Fairbanks handles everything, or its equivalent.

FOR SALE—Steam Yacht Arthur S. 65 ft long, 12 ft. beam; hull, 2-inch oak dem compound, condensing; cylinders, 6 and 12 in. by 12 in. stroke. Roberts water tube boiler; steam pressure allowed, 200 pounds; Blake condenser.

Has fore and after cabins with sleeping accommodations for thirteen; galley with refrigerators, pump, hot and cold water, and berth for steward. Yacht is licensed to carry thirty, but can carry seventy-five. She is in first-class condition in every respect.

Can be seen at Manistee, Mich. For further particulars address J. E. SOMERVILLE, Manistee, Mich., or GEO. H. WOODROW, Manistee, Mich.

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MARK H. HANLON,

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For fueling vessels I have the management and control of the Osborne-Seager pockets, located next to Cleveland Ship Bldg. Co.'s yard. Steamers coaled on short notice.

Fueling Lighter Reindeer.

This lighter is equipped with a clam shell bucket. Steamers fueled in any part of harbor or under the breakwater.

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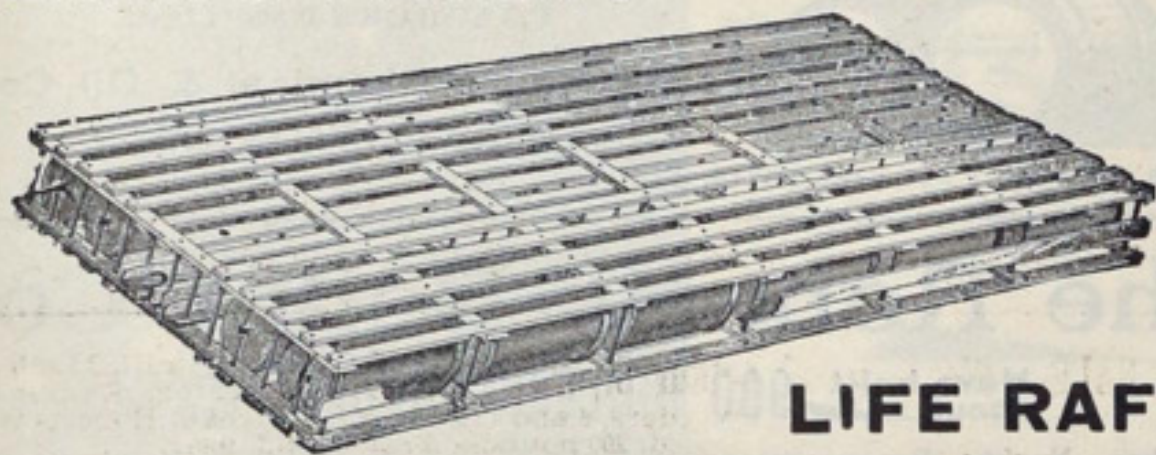
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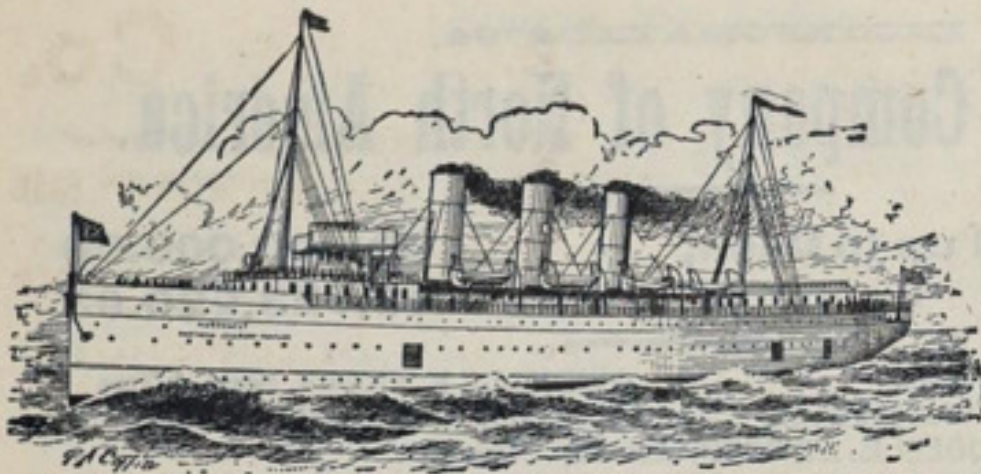
THE undersigned will receive bids up to April 30th, for the carrying of 45,000 tons of iron ore from Escanaba to Elk Rapids, deliveries to begin June 1st. Cargoes to consist of not more than an average of seven hundred and fifty tons. Depth of water at Elk Rapids fourteen feet. Bidders will name boats intended for the service. Terms free in and out, except trimming.

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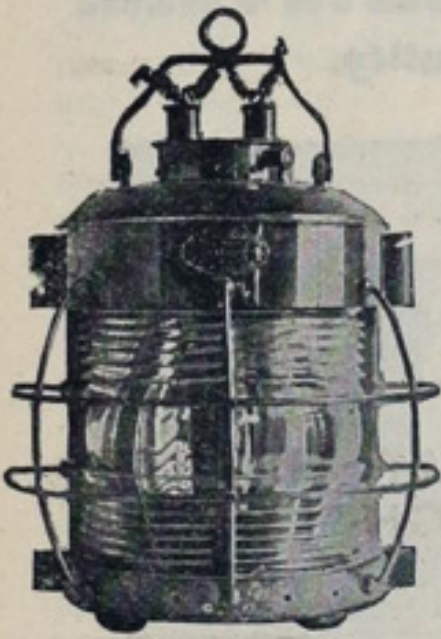
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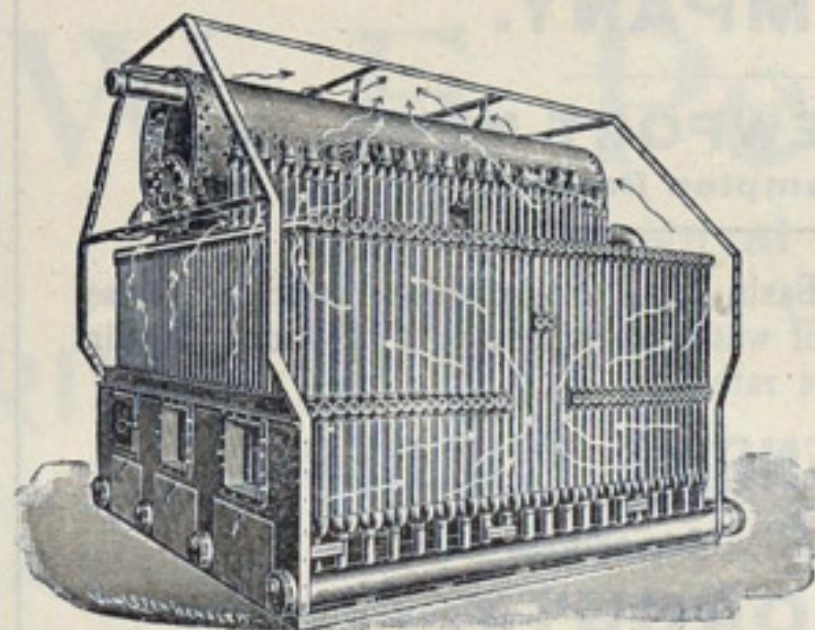
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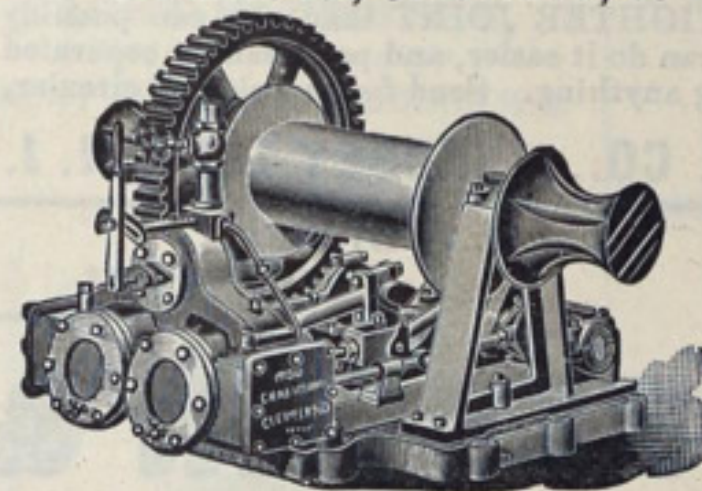
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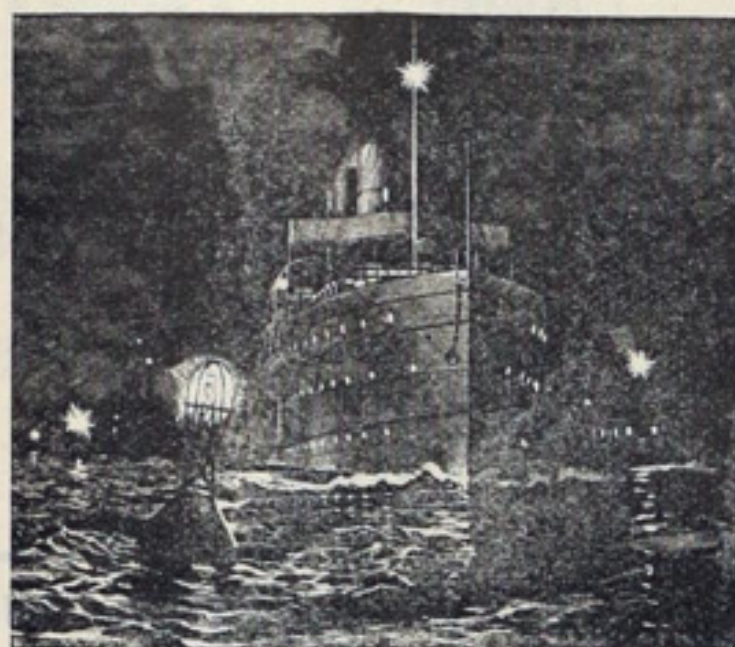
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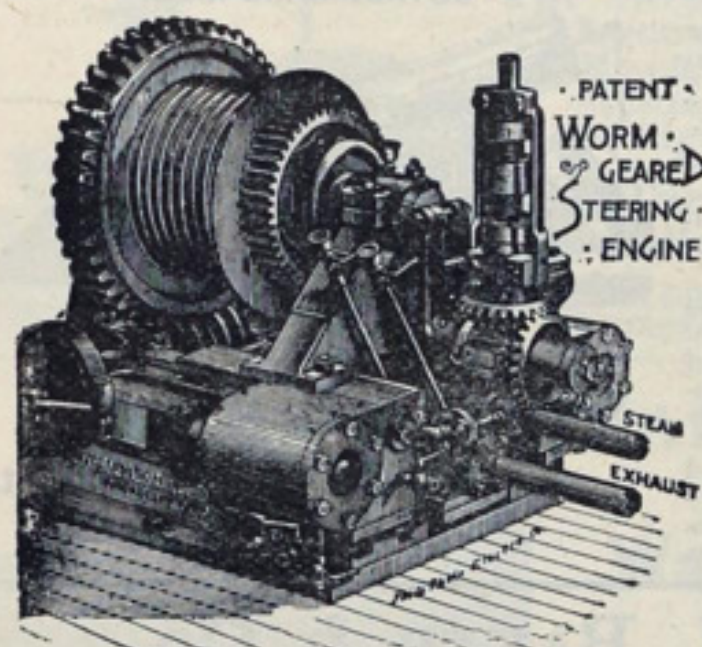
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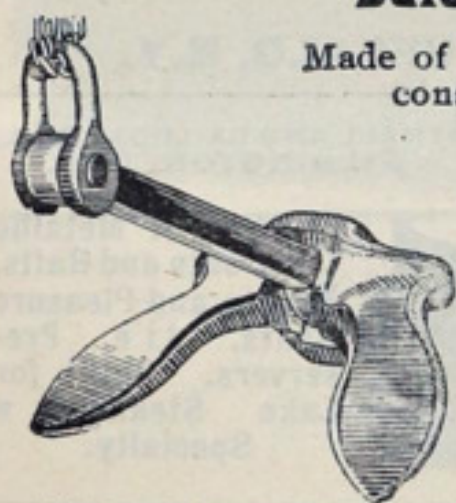
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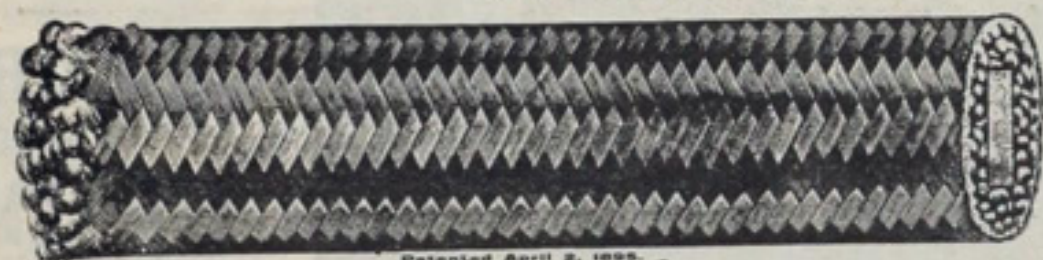
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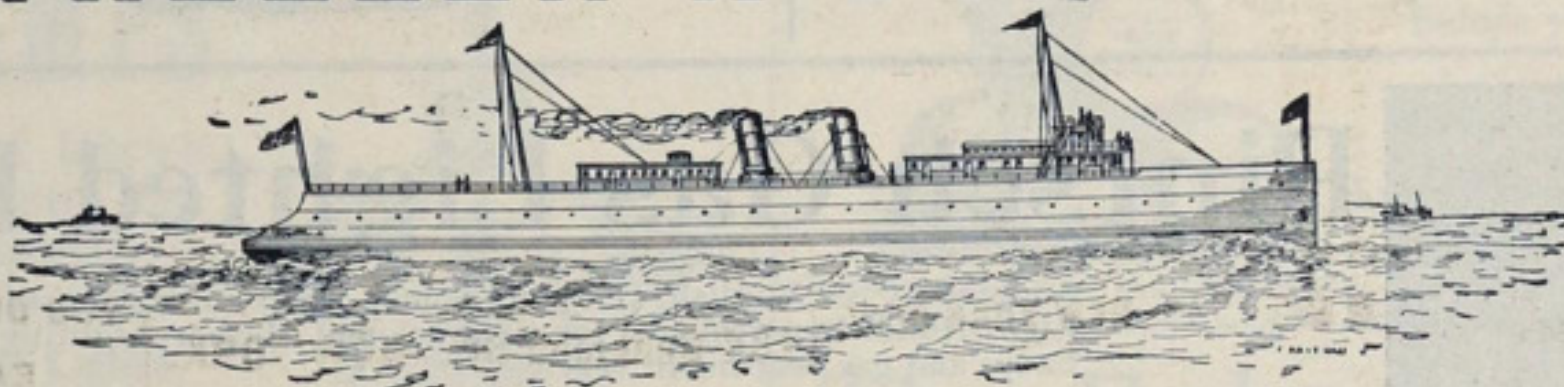
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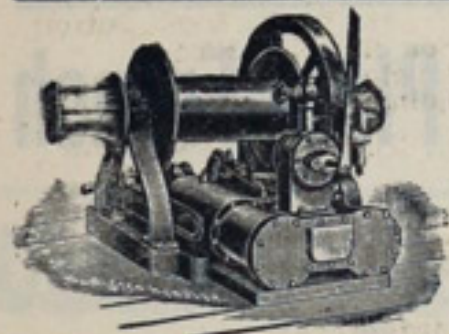
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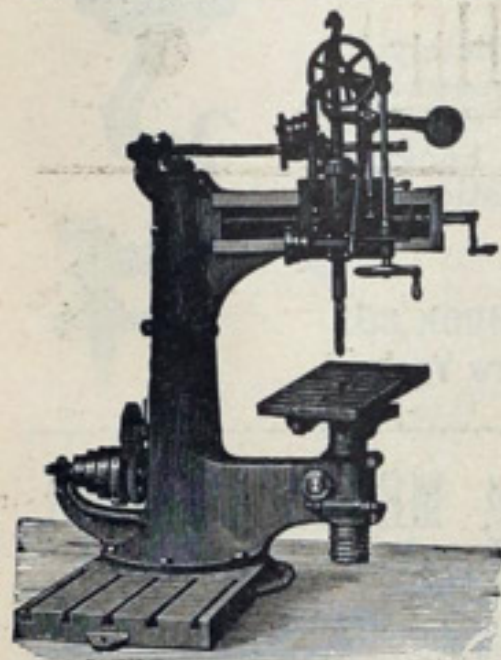
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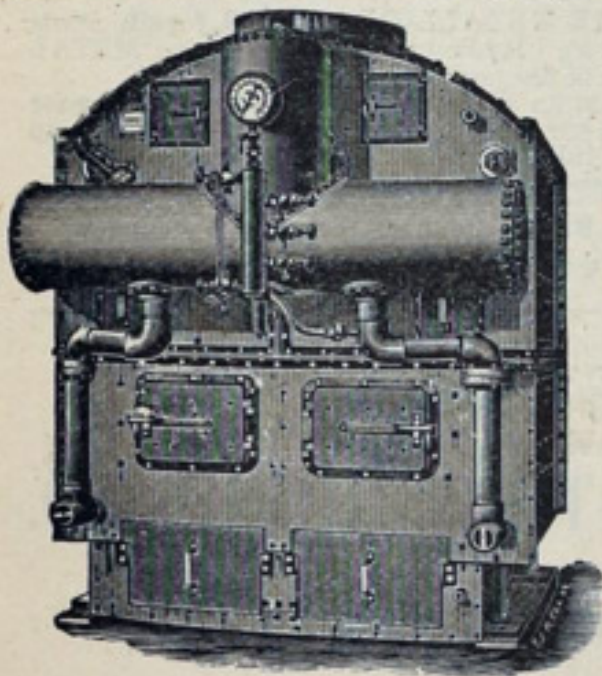
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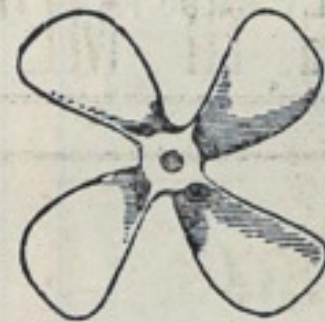
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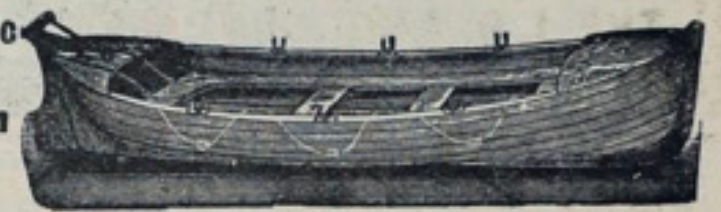
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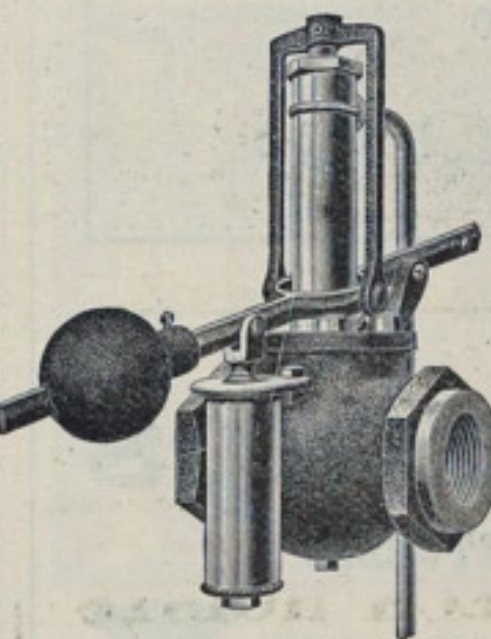
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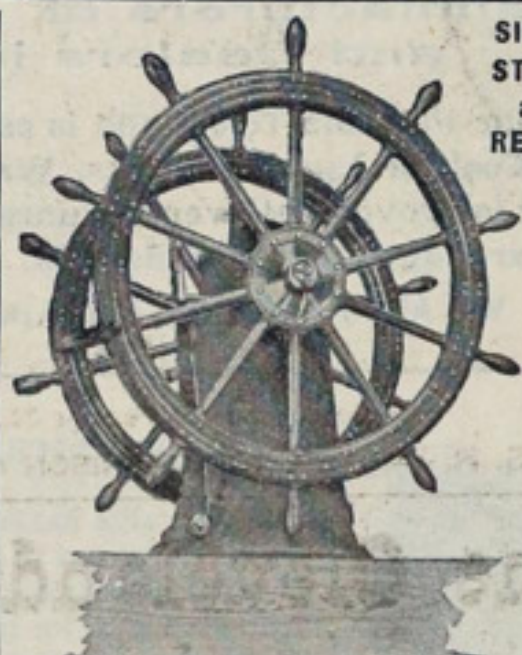
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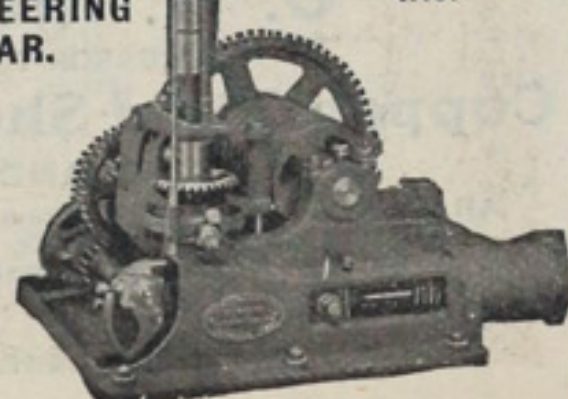
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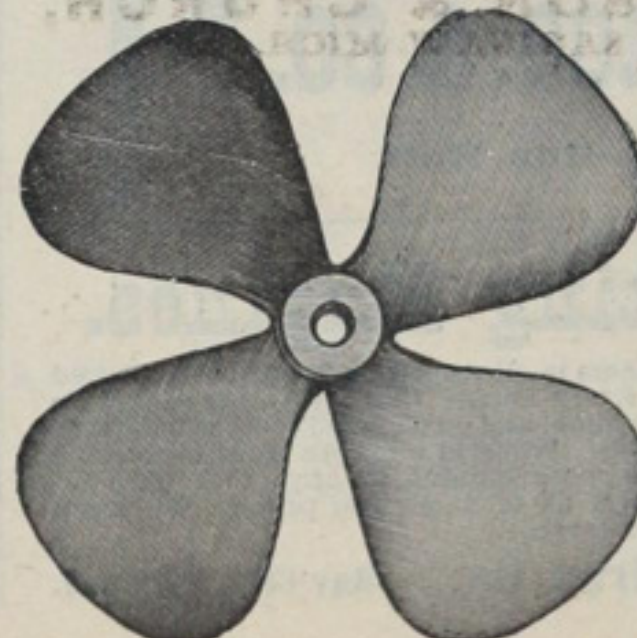
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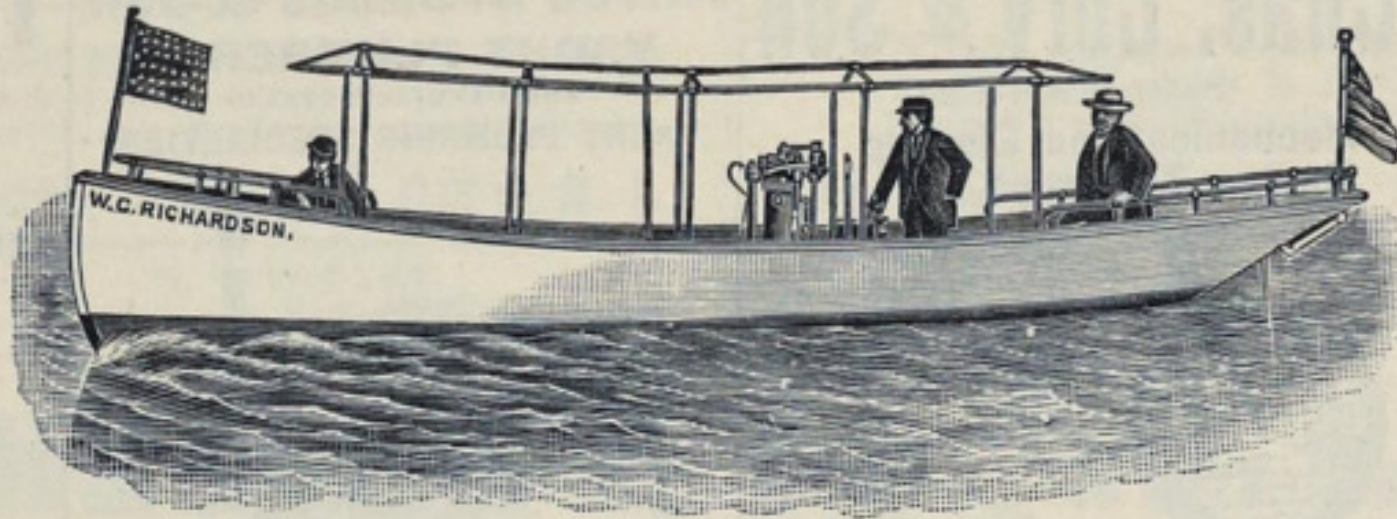


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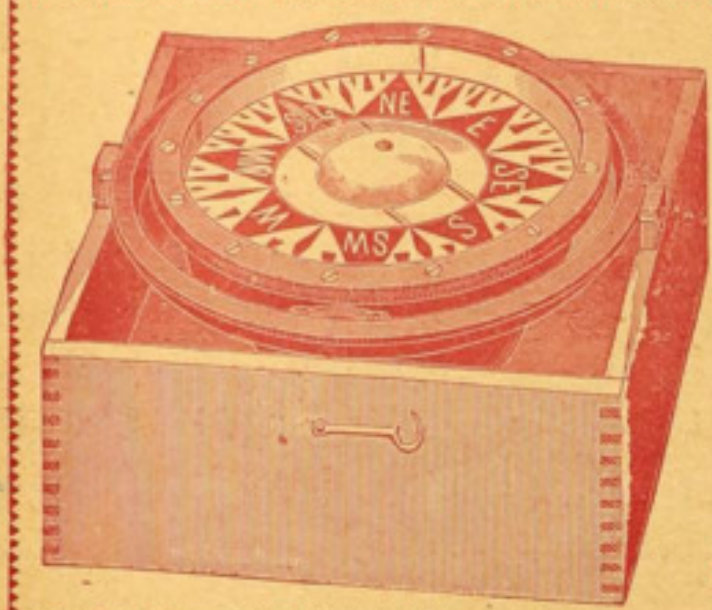
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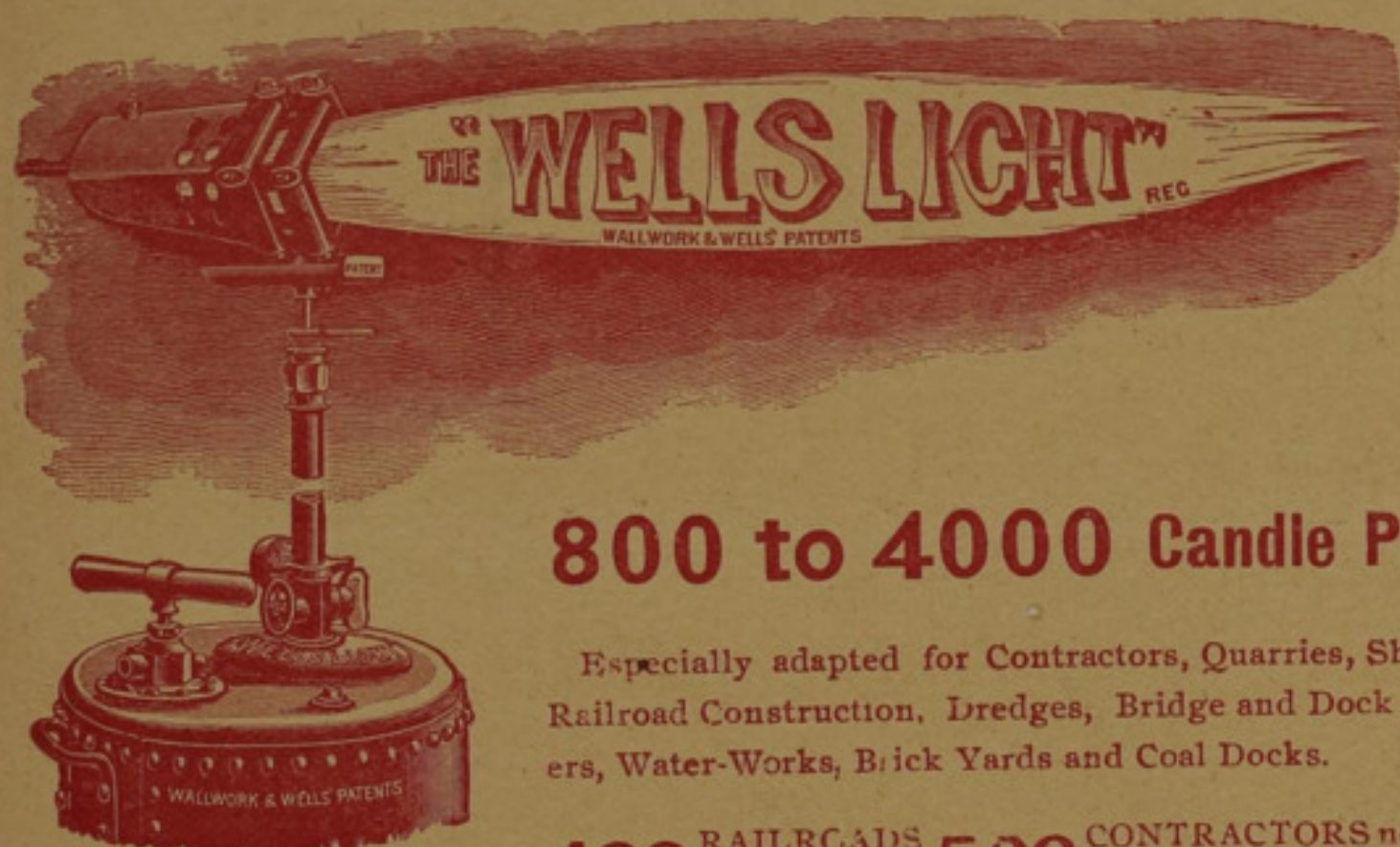
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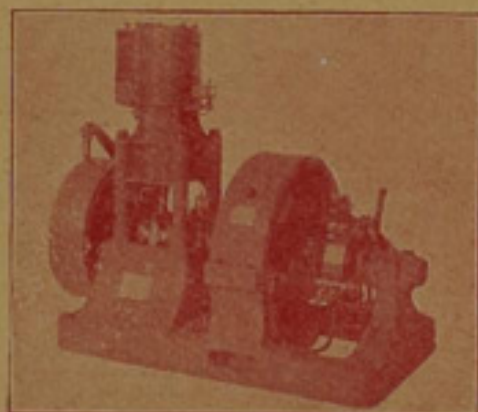
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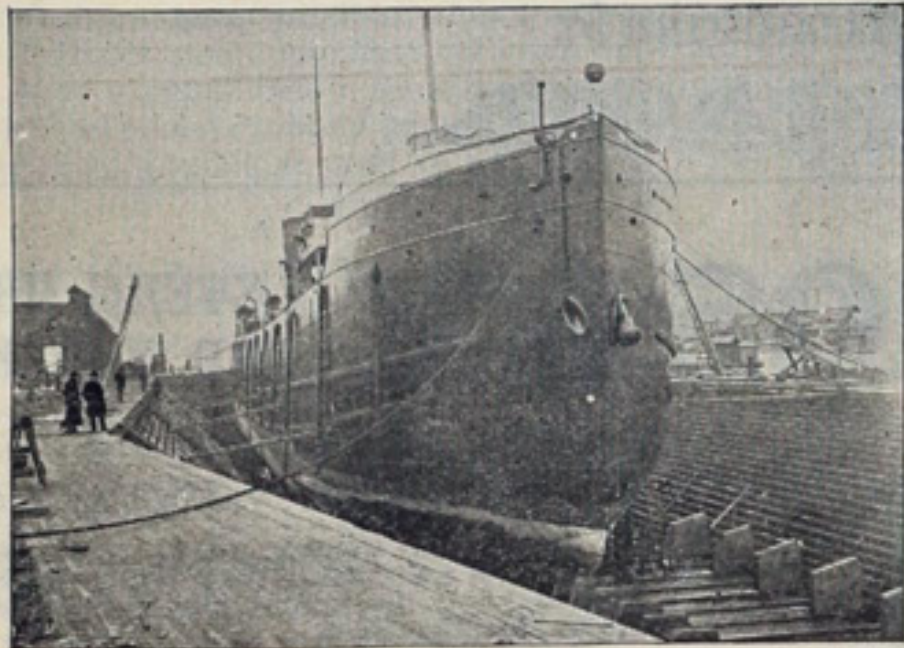
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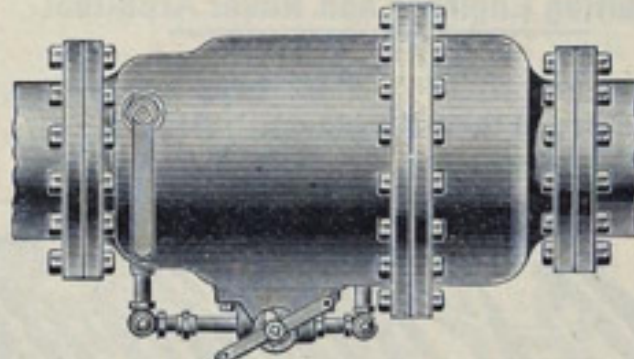
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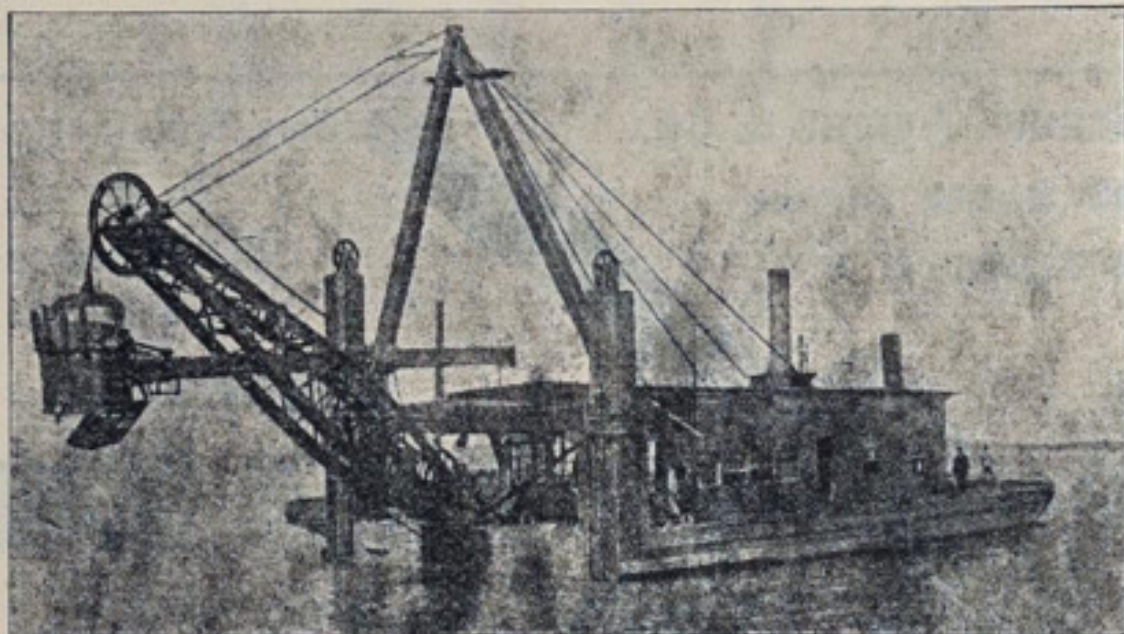
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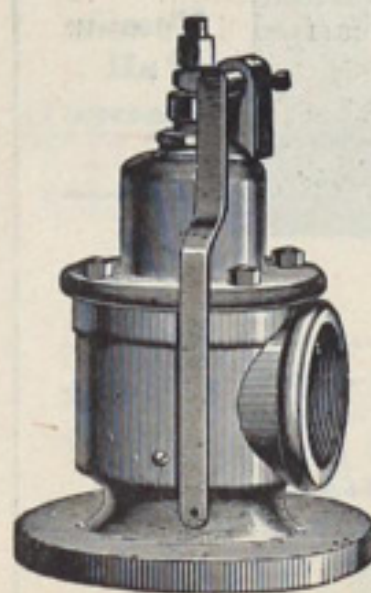
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